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REPORTS

MADE TO THE

GENERAL ASSEMBLY OF ILLINOIS,

AT ITS

TWENTY-SEVENTH SESSION,

CONVENED

JANUARY 4, 1871.

VOLUME III.

SPRINGFIELD:
ILLINOIS JOURNAL PRINTING OFFICE.
1872.

MESSAGE FROM THE GOVERNOR.

EXECUTIVE DEPARTMENT,
SPRINGFIELD, ILL., *December* 9, 1871.

To HON. WILLIAM M. SMITH,
Speaker of the House of Representatives:

I have the honor to lay before the General Assembly the following papers:

1. Copy of slip from the "Chicago Journal" of November 2, 1871.

2. Letter from the Governor of Illinois to the President of the United States, dated November 3, 1871.

3. Answer of the President, dated November 9, 1871.

Copies of papers transmitted by the President with his letter of November 9, 1871:

I. Proclamation of R. B. Mason, Mayor of Chicago, of date of October 11, 1871.

II. Order issued by Lieut. Gen. Sheridan, dated October 11, 1871.

III. Telegraphic dispatch from Lieut. Gen. Sheridan to the Adjutant General U. S. A., dated October 11, 1871.

IV. Telegraphic dispatch from Lieut. Gen. Sheridan to the Adjutant General U. S. A., dated October 12, 1871.

V. Note from R. B. Mason, Mayor of Chicago, to Lieut. Gen. Sheridan, dated October 22, 1871.

VI. Note from Lieut. Gen. Sheridan to R. B. Mason, Mayor, dated October 23, 1871.

VII. Note from R. B. Mason, Mayor, to Lieut. Gen. Sheridan, dated October 23, 1871.

VIII. Order of Lieut. Gen. Sheridan, dated October 24, 1871.

IX. Order of Lieut. Gen. Sheridan, dated October 24, 1871.

X. Report of Lieut. Gen. Sheridan to the Adjutant General U. S. A., dated October 25, 1871. with the endorsement of Gen. W. T. Sherman thereon.

XI. Communication of Messrs. Wirt Dexter and others to Lieut. Gen. Sheridan, dated October 28, 1871.

XII. Communication of Lieut. Gen. Sheridan to the Adjutant General U. S. A., dated October 29, 1871.

XIII. Telegraphic communication of Gen. W. T. Sherman to Lieut. Gen. Sheridan, dated October 31, 1871.

XIV. Military orders.

XV. Letter from the Governor of Illinois to the President of the United States, dated November 20, 1871.

XVI. Letter from the President of the United States to the Governor of Illinois, dated November 25, 1871.

DOCUMENTS.

No. 1.

"UNITED STATES TROOPS IN CHICAGO."

"It is telegraphed from Springfield that Governor Palmer is 'decidedly opposed' to United States troops being stationed at or near Chicago, and 'will oppose any such interference of his rights as Commander-in-Chief of the military of Illinois.' We do not believe, when the Governor knows the circumstances, that he will do any such thing.

"The officers of the Relief Society, together with a large number of our most prominent citizens, signed an application to General Sheridan to station some of the troops in his command at or near Chicago, to be used in case of emergency. The large supplies the Relief Society will have in store during the winter were not deemed safe; besides, threatened strikes in some quarters indicated that laborers willing to work might not be allowed to do so.

"General Sheridan referred the appeal of our citizens, with his favorable judgment, to the Secretary of War, who immediately ordered four companies of the Eighth United States Infantry from New York to Chicago, and they will arrive to-morrow morning, subject to the call of the authorities, should the necessity, unhappily, arise for their use. Only this, and nothing more.

"That the government has the same right to establish a military post near Chicago that it has near St. Louis and New York, and other cities, the most sensitive head of the militia of a State cannot question. That the authorities can call upon the government to assist in preventing a threatened outbreak, or putting one down, has been often demonstrated; and the people of Chicago have a right to the security which the presence of these troops affords them, no one with a grain of sense will pretend to question."—*Chicago Evening Journal, Nov.* 2, 1871.

No. 2.

STATE OF ILLINOIS, EXECUTIVE DEPARTMENT,
SPRINGFIELD, *November* 3, 1871.

HIS EXCELLENCY U. S. GRANT,
President of the United States:

SIR: I have the honor to inclose to you a printed slip cut from the "Chicago Journal," a highly respectable newspaper, published in Chicago, and respectfully ask your attention to its contents.

My apology for troubling your Excellency with a paper of the character of that inclosed is, that it is stated therein that "four companies of the Eighth United States Infantry have been ordered from New York to Chicago, and will arrive there to-morrow (to-day), subject to the call of the authorities," and that the reasons for ordering troops to Chicago are, that "the large supplies the Relief Society will have in store during the winter were not deemed safe; besides, threatened strikes in some quarters indicated that laborers, willing to work might not be allowed to do so," and that an application, stating these facts, was signed by the officers of the Relief Society, and other citizens, presented to General Sheridan, and by him approved and referred to the Secretary of War.

In addition to this, rumors in the form of telegraphic dispatches from Washington and Chicago have reached me, that troops were ordered to Chicago for purposes connected with the safety of property and the preservation of order in the city, but no information of the existence of the dangers alluded to have reached me from any quarter whatever.

I cheerfully concede that it is for the President to designate the stations of the troops composing the army, and that he is under no obligations, founded upon the constitution or the laws, or upon the rules of official courtesy, to communicate his orders, or the reasons that influence him in making them, to the Governor of any of the States, unless the orders in question, or the presence of the troops, are intended in some way to affect or influence the internal affairs of the particular State to which the troops are sent. In the latter case, it will readily occur to you that the Governor of the State, whose duty it is to enforce the laws, is deeply concerned for the troops, and the orders under which they are to act may operate to diminish, or greatly increase the difficulties of his official position. I am happy in the consciousness that the authorities of the State of Illinois are abundantly able to protect every interest of the people that depends upon its internal peace and good order, and am unwilling to believe that the President of the United States, acting upon information of a contrary character, communicated by private citizens to an officer of the army, has ordered any portion of the army into this State, to be subject to the call of the authorities, either to protect the store-houses of the Relief Committee, or to interfere with the possible, though not probable "strikes" of laborers.

I, therefore, deem it due to the importance of the subject, to frankly inquire of your Excellency whether the troops ordered to Chicago are intended or instructed to obey the call of any authorities of the State of Illinois, or the city of Chicago, or in any way whatever to assume the protection either of property or the preservation of order in that city?

I have the honor to be,
With great respect, etc.,
JOHN M. PALMER.

No. 3.

EXECUTIVE MANSION,
WASHINGTON, D. C., *November* 9, 1871.

HIS EXCELLENCY J. M. PALMER,
Governor of Illinois:

SIR: I am in receipt of your letter of the third instant, inquiring the nature of the orders, etc., under which four companies of United States troops have been ordered to the city of Chicago, and asserting your ability, as Executive officer of the State, to furnish all the protection asked in the appeal of the citizens of Chicago from these troops.

In reply, I inclose you a copy of the appeal, of General Sheridan's remarks thereon, of the orders given in sending the troops, and of all correspondence between General Sheridan and the authorities here, since the great fire, which laid so much of the wealth of Chicago in ashes.

I will only add, further, that no thought here even contemplated distrust of the State authorities of the State of Illinois, or lack of ability on their part to do all that was necessary, or expected of them, for the maintenance of law and order within the limits of the State.

The only thing thought of was how to benefit a people stricken by a calamity greater than had ever befallen a community of the same number before in this country. The aid was of a like nature with that given in any emergency requiring immediate action.

No reflections were contemplated or thought of, affecting the integrity or ability of any State officer or city official, within the limits of the State of Illinois, to perform his whole duty. I have the honor to be,

With great respect,
Your obedient servant,
U. S. GRANT.

I. (PROCLAMATION.)

The preservation of the good order and peace of the city is hereby entrusted to Lieutenant General P. H. Sheridan, United States Army.

The police will act in conjunction with the Lieutenant General, in the preservation of the peace and quiet of the city, and the Superintendent of Police will consult with him to that end—the intent hereof being to preserve the peace of the city without interfering with the functions of the city government.

Given under my hand this eleventh day of October, 1871.

R. B. MASON, *Mayor.*

Official copy: JAMES B. FRY,
Ass't Adj't Gen'l.

II.

HEADQUARTERS MILITARY DIV. OF THE MISSOURI,
CHICAGO, ILL., *October* 11, 1871.

GEN. F. T. SHERMAN:

DEAR SIR—With the approbation of the Mayor of this city, Lieutenant-General Sheridan directs that you organize a regiment of infantry, to consist of ten (10) companies; each company to consist of one (1) Captain, one (1) First and one (1) Second Lieutenant, and sixty (60) enlisted men, to serve as guards for the protection of the remaining portion of the city of Chicago, for the period of twenty (20) days.

Very respectfully, your obedient servant,
JAMES B. FRY, *A. A. G.*

Official copy: JAMES B. FRY,
Ass't Adj't Gen'l.

III. (TELEGRAM.)

CHICAGO, ILLS., *Oct.* 11, 1871.

GEN. E. D. TOWNSEND,
Adjutant General :

There was some excitement here yesterday and last evening, but is now quieting down. Some of the troops from Leavenworth and Omaha are coming in. I have taken the necessary steps to meet the condition of affairs here.

P. H. SHERIDAN.
Lieutenant General.

IV. (TELEGRAM.)

CHICAGO, ILLS., *Oct.* 12, 1871.

TO GEN. E. D. TOWNSEND,
Adjutant General ;

As there may be some trouble here when the banks have to settle with their depositors, and to keep down excitement, I have deemed it best to ask General Halleck for four (4) companies of infantry, which he has notified me he has in readiness at Louisville.

P. H. SHERIDAN,
Lieutenant General.

V.

CHICAGO, ILLS., *Oct.* 22, 1871.

LIEUT. GEN. P. H. SHERIDAN, U. S. A :

Permit me to tender you the thanks of the city of Chicago and its whole people, for the very efficient aid which you have rendered in protecting the lives and property of the citizens, and in the preservation of the general peace and good order of the community.

I would like your opinion as to whether there is any longer a necessity for the continued aid of the military in that behalf.

R. B. MASON,
Mayor.

HEAD QUARTERS MILITARY DIV'N OF THE MISSOURI,
CHICAGO, *October* 25, 1871.
Official copy:
JAMES B. FRY,
Ass't Adj't Gen'l.

VI.

HEAD QUARTERS MILITARY DIV'N OF THE MO.,
CHICAGO, *October* 23, 1871.

TO HIS HONOR R. B. MASON,
Mayor of the City of Chicago :

SIR—I have the honor to acknowledge the receipt of your kind note of the date of yesterday, and in reply, I beg leave to report a good condition of affairs in the city.

If your Honor deem it best, I will disband the volunteer organization of military on duty since the fire and will send the troops of the regular army to their homes, and will consider myself relieved from the responsibility of your proclamation of the eleventh instant.

With my sincere thanks for your kindness and courtesy in my intercourse with you,

I am, respectfully,
Your obedient servant,
P. H. SHERIDAN,
Lieutenant General.

Official copy:
James B. Fry,
Ass't Adj't Gen'l.

VII.

MAYOR'S OFFICE,
City of Chicago, *October* 23, 1871.

Lieut. Gen. P. H. Sheridan, U. S. A.

Upon consultation with the Board of Police Commissioners, I am satisfied that the continuance of the efficient aid in the preservation of order in this city, which has been rendered by the forces under your command in pursuance of my proclamation, is no longer required.

I will therefore fix the hour of 6 P. M., of this day, as the hour at which the aid requested of you shall cease.

Allow me again to tender you the assurance of my high appreciation of the great and efficient service which you have rendered in the preservation of order, and the protection of property in this city, and to again thank you, in the name of the city of Chicago and its citizens, therefor.

I am, respectfully,
Your obedient servant,
R. B. MASON,
Mayor.

Official copy :
James B. Fry,
Ass't Adj't Gen'l.

VIII.

Head Quarters Mil. Div. of the Missouri,
Chicago, Ill., *October* 24, 1871.

General Orders, No. 5.

The First Regiment Chicago Volunteers, raised with the approbation of the Mayor, and in pursuance of orders dated October 11, 1871, from these Headquarters, is hereby honorably mustered out of service and discharged.

This regiment was constituted as follows : Colonel Frank T. Sherman, First Chicago Volunteers, commanding.

Major C. H. Dyer, Adjutant.
Major Charles T. Scammon, Aide-de-Camp.
Lieut.-Colonel H. Osterman, First Regiment National Guards, Illinois State Militia.
Major G. A. Bender, First Regiment National Guards, Illinois State Militia.
Captain Fischer's Company (A), First Regiment National Guards, Ills. State Militia.
Captain Pasch's Company (D), First Regiment National Guards, Illinois State Militia.
Captain Cronas' Company (G), First Regiment National Guards, Illinois State Militia.

Captain Paul's Company (H), First Regiment National Guards, Illinois State Militia.
Captain Kelter's Company (I), First Regiment National Guards, Illinois State Militia.
Captain Rogers' Company (B), First Chicago Volunteers, Lieut. Adams commanding.
Captain Merrill's Company (C), First Chicago Volunteers.
Captain Baker's Company (K), First Chicago Volunteers, recruited by Capt. Whittlesey.
Captain Colson's Company, University Cadets.
Captain Croley's Company, Montgomery Light Guards.
Captain McCarthey's Company, Mulligan Zouaves.
Captain Ryan's Company, Sheridan Guards.
Captain Sulter's Company, Chicago Cadets.
Captain Williams' Company, Hannibal Zouaves.
The Norwegian Battalion of National Guards, Major Alstrup commanding, Ole Bendixen, adjutant,
Captain Paulsen's Company, (A.)
Captain Eck's Company, (B.)
Captain Johnson's Company, (C.)
Captain Bentzen's Company, (D.)

The troops were suddenly called from civil pursuits to aid Lieutenant-General Sheridan in preserving peace and good order, and in protecting the property in the unburned portion of the city—a duty intrusted to him during the emergency resulting from the late fire. They came forward promptly and cheerfully, at a time rendered critical by the unparalleled disaster which visited the city on the 8th and 9th instants, a calamity producing general distrust and distress, leaving a large part of the city in smouldering ruins, a large part in darkness by the destruction of the gas works, and the whole of it without water, and this with a fire department crippled and exhausted by the struggle it had gone through.

They have performed the arduous and delicate duties falling to them under these circumstances with marked industry, fidelity and intelligence. The Lieutenant-General thanks officers and men of the command, for the services rendered, and commends them to the kind consideration of their fellow citizens; and he makes special acknowledgment of the valuable aid received from their commander, General Frank T. Sherman—distinguished upon the battle fields of the late war—as well as from his official staff, Major C. H. Dyer, Adjutant, and Major Charles T. Scammon, Aid-de-Camp.

By command of Lieutenant-General Sheridan. JAMES B. FRY,
Ass't Adj't Gen.

IX.

HEAD QUARTERS MILITARY DIV'N OF THE MISSOURI,
CHICAGO, ILL., *October* 24, 1871.

SPECIAL ORDERS, No. 76.

The companies of the 4th, 5th, 6th, 9th and 16th United States infantry, on duty in this city, are hereby relieved, and will proceed to their respective stations, as follows:

Companies "F," "H" and "K," of the 4th, and "E" of the 16th, to Louisville, Ky.
Companies "A," "H" and "K," of the 5th, to Fort Leavenworth.
Company "I," of the 6th, to Fort Hays.
Companies "A" and "K," of the 9th, to Omaha.

The Quartermaster's Department will furnish the necessary transportation.

By command of Lieutenant-General Sheridan.

Official: JAMES B. FRY, *Ass't Adj't Gen.*

X.

HEAD QUARTERS MILITARY DIV. OF THE MISSOURI,
CHICAGO, *October* 25, 1871.

To the Adjutant-General of the Army, Washington, D. C.:

SIR: The disorganized condition of affairs in this city, produced by and immediately following the late fire, induced the city authorities to ask for assistance from the military forces, as shown by the Mayor's proclamation of October 11, 1871. [Copy herewith, marked A.] To protect the public interests intrusted to me by the Mayor's proclamation, I called to this city companies A and K of the 9th infantry, from Omaha; companies A, H and K of the 5th infantry, from Fort Leavenworth; company I, 6th infantry, from Fort Scott; and accepted the kind offer of Major-General Halleck to send to me companies F, H and K of the 4th, and company E of the 16th infantry, from Kentucky. I also, with the approbation of the Mayor, called into the service of the city of Chicago, a regiment of volunteers for twenty days. [Copy of this call inclosed herewith, marked B.] These troops, both regulars and volunteers, were actively engaged during their service here in protecting the treasure in the burnt district, guarding the unburnt district from disorders and danger by further fires, and in protecting the store-houses, depots and sub-depots of supplies, established for the relief of sufferers from the fire. These duties were terminated on the 23d inst., as shown by letters herewith, (marked C, D and E,) and on the 24th inst. the regulars started to their respective stations, and the volunteers were discharged, as shown by special orders No. 76, and general orders No. 5 from these headquarters [Copies herewith.] It is proper to mention that these volunteers were not taken into the service of the United States, and no orders, agreements, or promises were made giving them any claims against the United States for services rendered.

I am, very respectfully, your obedient servant,

P. H. SHERIDAN,
Lieutenant-General U. S. A., Commanding.

(The above communication indorsed as follows:)

HEAD QUARTERS OF THE ARMY,
WASHINGTON, D. C., *October* 31, 1871.

Respectfully Submitted to the Secretary of War:

The extraordinary circumstances attending the great fire in Chicago, made it eminently proper that General Sheridan should exercise the influence, authority and power he did on the universal appeal of a ruined and distressed people, backed by their civil agents who were powerless for good. The very moment that the civil authorities felt able to resume their functions, General Sheridan ceased to exercise authority, and the United States troops returned to their respective stations.

General Sheridan's course is fully approved.

Seen by the Secretary of War: W. T. SHERMAN, *General.*

JOHN POTTS, *C. C. W. D.*

XI.

CHICAGO RELIEF AND AID SOCIETY,
STANDARD HALL, COR. MICHIGAN AV. AND THIRTEENTH ST.,
CHICAGO, *October* 28, 1871.

Henry W. King, *President;*
Wirt Dexter, *Chairman Ex. Com.;*
Geo. M. Pullman, *Treas.*

LIEUTENANT-GENERAL P. H. SHERIDAN, *Commanding Department of the Missouri:*

GENERAL: The undersigned respectfully and urgently request that you will cause four companies of U. S. Infantry to be stationed at or near this city, until it shall appear that there is no danger of attack, by disorderly persons, upon the depots of the Relief and Aid Society, or other riotous proceedings, for which the recent appalling calamity may have paved the way. We believe that the presence of a small military force in this vicinity would, at the same time, deter any evil-disposed persons from organizing a breach of the peace, and reassure the public mind in an extraordinary degree.

Thanking you for the great services you have already rendered to this stricken community,

We are, General, your obedient servants,
WIRT DEXTER,
Chair. Ex. Com. Relief and Aid Soc.
JOSEPH MEDILL,
Editor Tribune.
W. F. COOLBAUGH,
President Union National Bank.
H. K. EAMES,
President Commercial National Bank.
F. IRVING PEARCE,
President Michigan National Bank.
C. H. BECKWITH & SONS,
140 *Michigan Avenue.*
J. W. PRESTON,
President Chicago Board of Trade.
CHAS. RANDOLPH,
Secretary Chicago Board of Trade.
E. HENGERLAND,
Illinois River Elevator.
HORACE WHITE,
Chicago Tribune.
CHARLES L. WILSON,
Chicago Journal.

XII.

HEAD QUARTERS MILITARY DIV. OF THE MISSOURI,
CHICAGO, *Oct.* 29, 1871.

BRIGADIER GENERAL E. D. TOWNSEND, *Adj't-Gen. U. S. A.*, *Washington, D. C.:*

GENERAL: Almost before the great conflagration in this city had exhausted itself, I saw the necessity of having a few companies of regular troops here for the preservation of the public peace and the protection of property and treasure. Their services were invaluable, but as soon as the excitement subsided, the old city government desired to again take charge, and of course I sent the troops home, although it had been my intention to keep four companies here during the winter.

The result has been that the troops were no sooner gone, than the turbulent spirit commenced to manifest itself, and seems to be increasing. I have, therefore, been solicited, by Mr. Joseph Medill, the in-coming new mayor, and the prominent citizens, to again bring to the city, for the winter, four (4) companies of infantry. I am satisfied of the necessity of their presence here, and ask the authority of the Secretary of War to bring them. They can be spared from General Pope's command. Please answer by telegraph.

I am, sir, very respectfully,
Your obedient servant,
P. H. SHERIDAN,
Lieutenant-General Commanding.

XIII. (TELEGRAM.)

HEAD QUARTERS OF THE ARMY,
WASHINGTON, *Oct.* 31, 1871.

TO GEN. P. H. SHERIDAN, *Chicago:*

Four companies of the 8th Infantry are ordered to Chicago to act as police, under your letter of the 29th.

W. T. SHERMAN, *General.*

XIV. (TELEGRAM.)

HEAD QUARTERS OF THE ARMY,
WASHINGTON, *Oct.* 31, 1871.

TO GEN. GEORGE G. MEADE, *Philadelphia:*

Order four (4) companies of 8th Infantry, with field officer, to Chicago, to report to General Sheridan in person.

W. T. SHERMAN, *General.*

HEAD QUARTERS MILITARY DIV. OF THE ATLANTIC,
PHILADELPHIA, PA., *Nov.* 1, 1871.

SPECIAL ORDER, No. 63.

The telegraphic order of the 31st ultimo, directing the Commanding General Department of the East to send four companies of the 8th Regiment of Infantry, with field officer, to Chicago, to report in person to Lt. Gen. Sheridan, commanding Military Division of the Missouri, is hereby confirmed.

By command of Major-General Meade: R. C. DRUM, *A. A. G.*

XV.

STATE OF ILLINOIS, EXECUTIVE DEPARTMENT,
SPRINGFIELD, *November* 20, 1871.

HIS EXCELLENCY U. S. GRANT,
President United States:

SIR:—I have the honor to acknowledge the receipt of your letter of the 9th of November, in reply to mine of the 3d of the same month, and also the copies of papers forwarded me by your direction.

I have read your Excellency's letter, and examined the papers received with great attention, and while I am not insensible of the kindness that prompts you to disclaim all distrust of the authorities of the State of Illinois, or of their ability to do all that may be necessary, or expected of them for the maintenance of law and order within the limits of the State, I have been unable to find anything in them to justify the extraordinary measure of ordering four companies of United States troops into this State to report to Lieutenant General Sheridan to act as police under his orders.

It seems to me to be very well settled as a principle of American public law, that the duty of protecting persons and property, and the preservation of public order and peace against the efforts of disorderly persons, or from local internal disturbance, is the peculiar and exclusive duty of the States, with which the government of the United States has no concern, and in which it cannot interfere, except upon the application of the Legislature or the Executive of the States, as contemplated by the 4th section of the 4th article of the Constitution, and that any attempt by the officers of the United States army to employ any part of the military forces, as proposed by the gentlemen who made the application for four companies of Infantry to be stationed at or near Chicago for an indefinite period, and approved by Lieutenant General Philip H. Sheridan, in his letter to the Adjutant General of the 29th of October, and by General W. T. Sherman, by his telegraphic communication to Lieutenant General Sheridan, of October 31st, 1871, must be improper, because violative of the Constitution and the laws.

I am not at all forgetful that your Excellency says "that what was done in respect to ordering the troops to Chicago, was upon the ground of emergency, to aid a people who had suffered greatly;" but, in this view, it seems to me that the General commanding the army overlooked the fact that the disastrous fire at Chicago did not relieve the State of Illinois from any of its duties, nor transfer any of them to the government of the United States.

Emergencies that demand extraordinary efforts often occur in the history of governments, but I do not remember another instance in our history, when it was held that an event that created a sudden demand upon the powers and resources of a State, operated to transfer any portion of the duties of the States to the United States.

The great fire at Chicago ceased on the 9th of October, and the Executive of the State of Illinois, under the belief that the disaster created an "emergency" provided for by constitution of the State, convened the General Assembly to meet in session on the 13th day of that month to make legal provisions to meet all the requirements of the occasion, and on the 19th day of October that department appropriated from the treasury an adequate sum to maintain a sufficient police force for the protection of every interest of the people. The emergency was thus provided for by the proper department of the proper government, in the only way that it could be done, or can be done. The State enlarged and strengthened its own agencies for the enforcement of its own laws, to meet the requirements of the new situation. The same calamity deprived the United States of its custom house, its post office, its court room and records, and threw upon that government the duty of adopting measures to supply the loss, but it has not yet occurred to the authorities of the State that the losses of the United States, or the interruption of its business, has so far changed the relations of the Federal and State systems, as to cast any portion of the duty of providing for any of the wants of the United States upon the State of Illinois, and they are as little able to understand how it is that events that cannot operate to enlarge the powers of the government of the State, should operate to confer upon a Lieutenant-General of the army the authority to interfere in matters of purely local State concern, or to authorize the General commanding the army to recognize and approve the application of the Lieutenant-General, and order four companies of United States Infantry to report to him to discharge the mere civil duties of "police."

I do not, of course, propose to discuss with your Excellency the question of the relative rights and powers of the United States, and of the States, under the Constitution, for I will not anticipate the possibility of a difference of opinion upon the point that the duties of the executive officers of the two systems are defined so accurately, and are kept so distinct by written constitutions and laws, that there is no possibility of a conflict between them. The duty of the President is to see that the laws of the United States are enforced, and that of the Governor of Illinois is confined to the enforcement of the laws of the State. Neither obstructs the other, nor aids nor interferes with his duties. The Governor of a State derives none of his powers from the United States, nor are his duties subject, in any respect, to the consent or discretion of the President, who can, in no wise, enlarge, abridge, or interrupt them, either by assuming them himself, or by entrusting them to others.

As these opinions seem to me to be incontrovertable, I cannot doubt that the orders to United States troops to act as police, or to otherwise interfere in the affairs or duties of the State, or any of its officers, were made without reflection, and that the troops will be at once withdrawn from this State; or, that the orders for their government will be so modified, as to prohibit their employment as police, or in any other way to interfere with any of the duties and functions of any of the officers created under the laws of this State.

The State of Illinois cannot accept their aid, or permit their interferance in its affairs, without a sacrifice of the confidence of its citizens, nor without giving countenance to a dangerous example.

Respectfully, your obedient servant,
JOHN M. PALMER.

XVI.

EXECUTIVE MANSION,
WASHINGTON, D. C., *Nov.* 25, 1871.

SIR:—I have received your letter of the 20th instant, and have referred it to the Secretary of War, with directions to inform General Sheridan that if the troops under his command have received any orders which, in any way, conflict with the provisions of the Constitution or the laws of the State of Illinois, he is instructed to rescind them.

Very respectfully yours,
U. S. GRANT.

TO HIS EXCELLENCY, JOHN M. PALMER,
Governor of Illinois, Springfield, Ill.

In submitting these papers to the General Assembly, it is not improper for me to say that when the regular troops that had occupied Chicago from the 11th to the 23d day of October, 1871, were ordered to their stations, and the volunteer force organized by Lieut. Gen. Sheridan was disbanded, I did not believe it to be possible that any officer of the U. S. Army could again find a pretext for intermeddling in the affairs of the State of Illinois.

My expectation of future exemption from military interference was based upon the belief that the authorities of the State had already done enough for the maintenance of law, and for the protection of all the interests of the people of Chicago, to merit their full confidence, and that the local officers of the city were then so alive to their duties, and so confident in the support of a powerful State, that no room would be left for external intervention. Everything, indeed, had been done for the aid and protection of the people of Chicago that was possible, and if all their interests were not secure, it was because the resources of civil government were not equal to their necessities.

The papers and correspondence herewith transmitted demonstrate, however, that I was mistaken, and that the appropriations made by the General Assembly for the support of an adequate police force in Chicago, the energetic discharge of duty by the police, and the most orderly conduct on the part of the people, were alike unavailing—for, on the 31st day of October, 1871, General W. T. Sherman, upon the application of Lieutenant General Sheridan, ordered troops to Chicago to act as police.

My letters to the President of the United States, of the 3d and 20th of November, will prove that I have exerted myself to induce the President to withdraw these troops from the State, or to prohibit them from interfering in its internal affairs; and those of the President to me, of date of November 9th and 25th, will show that my efforts have been fruitless, and that the President has practically referred the whole subject to the decision of the officer whose conduct is questioned.

It is manifest that the order of the President, described in his letter of November 25, ends all discussion, and leaves Lieutenant-General Sheridan with four companies of infantry in Chicago with discretionary powers to intermeddle in affairs that are within the exclusive and peculiar jurisdiction of the State, and with which the President and his military subordinates have no rightful concern whatever.

It seems to me, from the letters of the President, and the papers laid before the General Assembly, that General Sherman and Lieutenant-General Sheridan entertain the belief that, under our system of government, it is a part of the duty of the officers of the army of the United States to superintend the administration of the local governments, and that if they are not satisfied with the measure of protection afforded by the States to the persons and property of their own citizens, the officers of the army have the right, at their own discretion, to introduce a part of the army, and, through its agency, afford such additional protection to the people as they may think necessary or proper, and that their right to interpose for that purpose does not depend upon the ability of the States to discharge their duties.

There is no other ground upon which the conduct of Generals Sherman and Sheridan can be placed. No one will pretend that the State of Illinois is not able to enforce its own laws, and protect every person and all the property within its limits; but General Sheridan, in the exercise of his superintendence of its affairs, was not satisfied with the provisions made by the State for the safety of property, and the control of what he is pleased to call "the turbulent element" in Chicago, and he therefore informed the Adjutant General that "I am satisfied of the necessity of their (four companies of infantry) presence here, and ask the authority of the Secretary of War to bring them;" and General Sherman, acting upon the same principle, promptly informed him by telegraph that "four companies of the Eighth Infantry are ordered to Chicago to act as police, under your letter of the 29th."

The President, it is true, in his letter to me of the 9th of November, informed me "that the only thing thought of in ordering these troops to Chicago was how to benefit a people stricken by a calamity greater than had ever befallen a community of the same number before in in this country. The aid was of a like nature with that given on any emergency requiring immediate action." It is to be remembered that Chicago is a part of one of the most wealthy and powerful States of the Union, that the State Government is in full vigor, and its laws everywhere enforced, and that its resources are ample for the discharge of all its duties. It will surprise no one, then, that I protest that no emergency has existed at any time in the history of the State of Illinois for which it was unable to provide, and nothing in the Constitution or the laws to give the President or his military subordinates the right to determine when it is necessary or proper for the authorities of the United States to interfere in the internal affairs of the States.

I also deny that the officers of the army have the right to determine the measure of the duties of any civil officer, under any circumstances whatever, or that their powers are increased by any emergency that can possibly happen in the affairs of any State. They are not, as they seem to suppose, the natural rulers of the people under circumstances of difficulty and danger, but they are, at all times, the inferiors of the humblest officer created to execute the laws of the land.

I cannot expect that Lieutenant-General Sheridan will accept this as the proper estimate of his official powers; for whatever concessions he may have on some occasions made to the imaginary authority of the Mayor of Chicago, in his correspondence with the War Department, he has, in every instance, spoken of himself as acting in his military character, and his orders for the government of Chicago emanated from his headquarters, and are signed by the proper officers of his military staff.

In his dispatch to the Adjutant-General, of the 11th of October, he said: "There was some excitement here, yesterday and last evening, but it is now quieting down. Some of the troops from Leavenworth and Omaha are coming in. I have taken all necessary steps to meet the condition of affairs here." And he says, in his dispatch to the Adjutant-General, of the 12th of October: "*As there may be some trouble here when the banks have to settle with their depositors*, and to keep down excitement, I have deemed it best to ask General Halleck for four companies of infantry, which he has notified me he has in readiness, at Louisville;" and finally, as the expression of his own opinion of the completeness with which he, in his military capacity, had grasped all the powers of the government of Chicago, he says, in his letter to the Adjutant-General, of the 29th of October: "Almost before the great conflagration in this city had exhausted itself, I saw the necessity of having a few companies of regular troops here, for the preservation of the public peace, and the protection of property and treasure. Their services were invaluable, *but as soon as the excitement subsided, the old city government desired to again take charge*, and of course I sent the troops home, although it had been my intention to keep four companies here during the winter."

And the General commanding the army seems also to have fallen into the dangerous error of supposing that his official military powers are paramount to the constitution and the laws. He endorsed upon the report made by Lieutenant General Sheridan, of his operations while enforcing military rule in Chicago, his approval of all the acts of his subordinate, and that, too, with an emphasis that, he seems to have supposed, will preclude all question of the propriety of his conduct; and on the 31st of October, when the same officer applied to him for leave to bring other troops to Chicago, he not only responded favorably to his wishes, but informed him that the troops were to *act as police*.

It is due to the dignity of the people of the State, that I should say that I cannot consent that the grave and important subjects that I have urged upon the attention of the President, shall be decided by an officer of the army; but I must hereafter, as I have done in the past, protest against all interference by the officers of the army, in the affairs of this State. I must protest against such interference, because it will establish a precedent dangerous to liberty, because it familiarizes the people with military rule and inspires them with distrust of the capability of civil government to afford them needful protection; and it is now for the representatives of the free people of the State to discharge their duties according to their own convictions and subject to their own responsibilities.

JOHN M. PALMER.

SEVENTH ANNUAL REPORT

OF THE

Institution for the Education of

FEEBLE-MINDED CHILDREN,

LOCATED AT JACKSONVILLE, ILLINOIS.

DECEMBER, 1871.

OFFICERS OF THE INSTITUTION.

SUPERINTENDENT,

C. T. WILBUR, M. D.

MATRON,

MRS. L. P. WILBUR.

ASSISTANT MATRON,

MISS E. A. STANSBURY.

TEACHERS,

MISS SARA BONIFACE,
MISS SOPHIA E. BLAKE,
MISS ORRA L. STODDARD,
MISS LEILA BURGESS.

CLERK,

M. DAVID.

BOARD OF TRUSTEES.

OFFICERS.

PRESIDENT,

GRAHAM LEE.

SECRETARY,

C. T. WILBUR, M. D., *ex officio.*

TREASURER,

WM. S. HOOK.

TRUSTEES.

Hon. GRAHAM LEE, Hamlet, Mercer County.
DAVID PRINCE, M. D., Jacksonville, Morgan County.
(One vacancy.)

REPORT OF THE DIRECTORS.

To His Excellency John M. Palmer,
Governor of the State of Illinois :

Sir : At the regular session of the General Assembly in April, an act was passed incorporating the Illinois Institution for the Education of Feeble-minded Children, to take effect as provided for by the constitution of the State, on the first of July after its passage ; and said act having been approved on the sixth of April, in accordance with the requirements of section 9 of that law of incorporation, the Board of Trustees respectfully submit this, their first, which is also the Seventh Annual Report of the Institution.

On the twenty-first day of June, 1871, at a special session of the General Assembly, David Prince, of Morgan county, Graham Lee, of Mercer county, and Timothy Souther, of Madison county, having been appointed by the Governor, were confirmed by the Senate as Trustees of the Institution.

Mr. Souther died before the law took effect, and was never qualified as Trustee.

On the twentieth day of July, the Board of Trustees was organized by the selection of Graham Lee as President, and by the re-appointment of Dr. C. T. Wilbur as Superintendent of the Institution—the Superintendent being ex-officio Secretary of the Board. William S. Hook, of Jacksonville, was appointed Treasurer of the Institution, and his bond was fixed at the sum of twenty thousand dollars.

The Board of Directors of the Institution for the Deaf and Dumb, by their Secretary, Dr. P. G. Gillett, formally transferred the property and funds in their possession belonging to this Institution, in accordance with section 12 of the law of incorporation.

A statement of the property and liabilities of the Institution on the first of July, was made, and according to this statement, in addition to the buildings, the personal property of the Institution amounted to $6,949 77.

The liabilities of the Institution upon that date, as set forth in a detailed statement, amounted to $904 78, exclusive of two or three bills of small amounts, which had not been handed in.

A detailed statement of all book accounts due the Institution from counties and individuals, amounted to $986 21, a portion of which cannot probably be collected.

The amount of cash transferred, inclusive of a contingent fund, subject to the order of the Superintendent, was $7,060 91.

A financial exhibit of the entire receipts and expenditures for the year ending November 30, 1871, showing in detail the expenditures, will form a part of this report.

Even the short period of time which has elapsed since we were called upon to take charge of the affairs of the Institution, has fully confirmed us in the opinion so heartily expressed by our predecessors, that feeble-minded children can be educated, that they can be elevated from a condition of misery and idleness, to that of happiness and productive usefulness, by judicious instruction and training.

The expense attending their custody and care in the State Institution, is no greater than it would be elsewhere, and when the results attained are taken into consideration, it is surely economy on the part of the State to give them the advantage of the public school.

In other States, where these schools have been established, they have been steadily increasing in numbers and in public favor.

It will be seen, by reference to the Superintendent's report, that according to the testimony of the parents and friends of the pupils, their children have, under the training of the Institution, improved in health and in personal appearance; are less nervous, less awkward, and more active.

That marked improvement has been manifested in their waiting upon themselves at the table; in dressing and undressing themselves; and in habits of personal cleanliness.

They are found to be less troublesome at home, talk more, and more distinctly; comprehend language more readily, and use a greater variety of words, and more connected sentences.

That the perceptive faculties have been rendered more acute, and memory improved.

That considerable progress has been made in reading, writing and geography, and that the power of fixing the attention has been developed. Many are now capable of useful occupation, seem to exercise more judgment in the practical matters of every day life; have more self-control; more steadiness of purpose and perseverance; are more quiet in manners; more obedient, more affectionate and good tempered; are less selfish; recognize more clearly the distinctions between right and wrong. Parents uniformly testify, in accordance with our hopes and wishes, that their children have improved and developed beyond their reasonable expectations.

It will also be seen, by the statistics quoted in the Superintendent's report, that this class of persons are as numerous as the insane.

Comparatively, then, how little provision is being made for their redemption from misery, when it is proved so conclusively that they can be elevated, educated and trained to useful occupation.

The insane, the blind, and the deaf and dumb have their large and elegant buildings and grounds.

This should be more thoroughly understood: That idiots and feeble-minded persons are as numerous as the insane, is the statement of the Board of Public Charities, and yet provision is only made for the accommodation of eighty such, upon rented property, in frame buildings, while provision is now being made for six hundred insane, in addition to the five hundred already accommodated in the State Hospital at Jacksonville.

These accommodations are for the insane exclusively, as the law in relation to the State Hospital for the Insane requires that "no idiot shall be admitted into the Hospital, and every such case shall be discharged—the Trustees and Superintendent having a right to decide what cases are idiotic."

Both laws of 1869, organizing the Southern Hospital for the Insane and the Northern Hospital for the Insane, provide that the rules regulating the reception, care and treatment of patients in the Illinois State Hospital for the Insane shall govern these establishments when they are ready for the admission of patients.

All philanthropic persons must rejoice that such large provision is made for this unfortunate class, and more extensive provision may become necessary for cure or custody.

Yet there is a class as numerous as the insane, for whom provision in families is impracticable, and the pauper portion of them receive worse than neglect in county poor houses in which these imbeciles are placed for custody, without thought of culture.

From the first biennial report of the Board of Public Charities of this State, in relation to the county alms houses, it appears from official observation that in addition to numerous evils and abuses applicable to older persons, "the children in alms houses have little or no hope of ever being lifted, by any agency whatever, out of the pauper class." They are almost without exception uninstructed and untrained.

There is scarcely a county in the State in which any attempt is made to impart either secular or religious instruction to the pauper. It follows, of course, that those feeble-minded children who become the objects of county support, are not only *not* elevated by the influence of home and school, but are still more degraded by their associations and their utter neglect.

It is one of the most important ends of this charity to provide discipline for those friendless children whose intellects are too feeble or too perverted to be trained in families as other bound children.

The Trustees of this Institution cannot close their report without an expression of their appreciation of the fitness of the present Superintendent for the peculiar labors of his position. To provide instruction suited to dull intellects is a more difficult task than the teaching of children who are quick to learn.

The more deeply the inner consciousness is encased, the more difficult is the approach to it; while the active intellect reaches forth to grasp objects and principles, making self-education possible, and giving us frequent examples of self-made men, the feeble intellect requires to be taught by ingenious devices those things which most children learn by imitation, or seem to have spontaneously developed as if by instinct. It is in the adaptation of means to ends in the modern field of culture, that this Institution is fortunate in its Superintendent and teachers, fortunate in the results already attained, with a promise of still better methods and greater attainments in the future.

In the enthusiasm which our familiarity with the methods and results has inspired us, we commend this charity as one of equal importance with any in the State.

We desire to be understood that the Institution is, at all reasonable hours, open to the inspection of the people of the State.

To the members of the Legislature, an invitation is specially tendered to inspect its working methods under the direction of the Superintendent and his efficient subordinates.

While the heart may sadden at the sight of so many children mentally deficient, feelings of joy will arise on witnessing the success of the means employed for stimulating mental action, affording correct moral perceptions, and imparting some degree of grace and precision to physical movements.

These means have been devised by scientific thought, prompted by philanthropy, and have been put into successful operation by the legislation of the representatives of a people always ready to share their abundance with the children of misfortune.

Respectfully submitted,

GRAHAM LEE,
DAVID PRINCE,
Trustees.

REPORT OF SUPERINTENDENT.

To the Board of Trustees of the Illinois Institution for the Education of Feeble-Minded Children:

Gentlemen: During the past year, ending Nov. 30, 1871, the most important event in the history of the Institution has been the recognition of the General Assembly of its usefulness, by an act of incorporation, which was approved on the 6th of April.

Its term of probation as an "Experimental School" had been so productive of results, not only in the amelioration of the condition of those committed to its care, but in the influence it exerted in the development of facts in relation to the number and condition of this class of unfortunates throughout the State, that its incorporation as one of the permanent charitable institutions had become an imperative necessity.

In accordance with that act of incorporation, this annual report must show "the number of applications received, the number of pupils under instruction, the number of pupils admitted, and the number of pupils discharged during the year; also, the progress and results of the system of instruction pursued at the Institution, and such general facts as may be instrumental in giving the people of the State of Illinois all the information proper to be laid before them, together with a detailed financial statement of all moneys received, and how they have been expended."

The total number of applications that have been received since the organization of the School, is three hundred and seventy-eight.

A tabulated statement of the counties from which these applications have been received is here introduced; also the number from other States:

Alexander	1	Bond	2
Adams	6	Carroll	4
Brown	1	Cook	43
Boone	5	Champaign	6
Bureau	5	Christian	2

Cass	5
Clinton	2
Clark	1
Clay	1
Coles	1
De Kalb	1
De Witt	3
Edwards	1
Edgar	2
Franklin	1
Fayette	1
Fulton	3
Grundy	3
Greene	3
Henderson	1
Henry	6
Hancock	7
Hardin	1
Iroquois	2
Jo Daviess	5
Jackson	5
Jersey	2
Kankakee	6
Knox	13
Kane	6
Logan	3
Lake	3
La Salle	8
Livingston	5
Lawrence	3
Lee	4
Moultrie	2
Mercer	2
Mason	3
Monroe	1
McDonough	6
Marshall	2
McLean	9
Morgan	21
McHenry	2
Menard	5
Macon	5
Marion	2
Madison	4
Macoupin	7
Montgomery	3
Ogle	6
Perry	1
Piatt	3
Pulaski	2
Pope	1
Peoria	13
Pike	6
Richland	4
Saline	1
Schuyler	2
St. Clair	5
Scott	6
Stephenson	3
Sangamon	10
Tazewell	3
Wayne	1
Williamson	1
Whiteside	4
Washington	1
Winnebago	6
Will	2
Unknown	1
Total Illinois	349
Other States.	
Arkansas	1
Indiana	5
Iowa	6
Kansas	3
Missouri	4
Michigan	3
Tennessee	1
Wisconsin	6
Total	29
Grand Total	378

The number received since the publication of the last annual report is seventy-two.

Since the incorporation of the Institution, the applications received have been in a much larger ratio than heretofore, from a class of children for whose benefit the Institution was really designed. The more hopeless cases of idiocy, or those afflicted with epilepsy or convulsive diseases properly belonging to the class of custodial or hospital cases, are the ones that usually first seek admission to an establishment of this nature.

A certain proportion of our applications received have been for epileptics who could not be admitted, as it has been found in the experience of similar institutions that the faculties of the mind are usually impaired to such an extent by epileptic convulsions, that the results of months of training may be completely obliterated by this terrible malady, and that in such cases medical and hospital treatment are indicated, rather than school room instruction.

In the last report the number of pupils from each Senatorial district of the State were given, but as, at this time, the new apportionment of districts has not been adopted by the Legislature, we must necessarily omit it for want of the knowledge of precisely what territory will constitute these districts. The pupil inmates at the present time are from the following counties of the State:

Adams	1	McLean	2
Cook	6	Morgan	4
Champaign	2	Menard	1
Christian	1	Macon	2
De Kalb	1	Madison	1
De Witt	2	Macoupin	1
Henry	2	Montgomery	1
Hancock	1	Perry	1
Iroquois	1	Peoria	5
Jo Daviess	3	Pike	1
Jackson	1	Putnam	1
Kankakee	2	Richland	2
Knox	2	Schuyler	1
Kane	2	Scott	1
Logan	1	Stephenson	1
La Salle	1	Sangamon	5
Lawrence	1	Whiteside	2
Lee	2	Will	2
Moultrie	2		—
Mason	2	Total	71
McDonough	1		

During the past year there have been eighty-six pupils under instruction. Thirty pupils have been received, and fifteen removed. Two of those removed died; one from McDonough county, of congestion of the brain, another from Bureau county, of laryngitis. Seven were found to be too young or unprofitable cases for school room instruction, or afflicted with epileptiform convulsions. Three have been detained at home on account of ill-health; one is now being sent to the district school at home, and the remaining two were found to be so useful that their services were needed at home.

There are seventy-one pupils now present.

Applications are often made for the admission of children whose ages are five, six and seven years.

These are too young, usually, for the school room, and ought not to be taken away from the tender nursing and care of parents, for feeble-minded children of these ages are, in their development, much below ordinary children, and it would be considered unadvisable to send bright children away from their homes at so early an age.

"Gross misconceptions prevail upon the true nature of idiocy, that produce a want of faith in the teachableness of idiots. These arise partly from a crude and hasty observation of a limited number of cases, and are confirmed by the common expressions one meets with so frequently whenever the subject is written about or spoken of. Even the witnessed or well-authenticated results of efforts for their education are regarded as if they were the performances of trained animals, as if because their animal nature is developed somewhat at the expense of the spiritual, they were endowed with instinct, instead of reason, by the Creator. But it should be remembered that they have a human origin; that however they may differ in physical, mental or moral organization, they are yet human beings; that their degradation in the scale of humanity, however it may modify, constitutes no absolute release or outlawry from the duties or rights which belong to them as human beings; and finally, that they have a human soul—a human destiny."

Many are not familiar with the design of the Institution for Feeble-Minded Children. The object and aim of an institution for this class of children is: the improvement of the general health, by physical training, exercise, bathing and all other suitable appliances, with such use of medicines as may be beneficial, the awakening, regulation and development of the mental powers, by those means, peculiarly adapted to this class, which have already been found so effectual in similar institutions; the employment of those educational resources which have been systematically developed in similar institutions, with as much modification and extension as may be necessary to meet the peculiarities of pupils; in the cases of the best class of pupils, the providing of some suitable occupation, giving healthy employment, at once agreeable and profitable, to all their powers, especially keeping in view such occupations as may fit the pupils for future usefulness and intercourse with society. Among the first lessons are those designed to teach them to take care of themselves, as far as possible, in all personal matters.

As a general rule, judicious physical exercise is the basis of the whole course of instruction.

The exercises of the school room, which are strictly educational, are based upon no new principles of education—for many of the principles adopted in any judicious course of instruction for ordinary children will be equally applicable to our pupils—but consist of novel applications of those principles to meet the peculiar mental conditions of the subject.

The method of instruction is peculiar in this: that it commences with exercises adapted to the very lowest degree of intelligence, and proceeds, by a very gradually ascending scale, up to the point where ordinary systems of education begin. These exercises commence at the lowest possible point that can well be conceived of—the exciting in an inert mind incapable of self-determination, in response to suitably applied stimuli, the feeblest voluntary action—and end with those that constitute the lessons of an ordinary elementary school. To each class of pupils, as far as they can be classified, a series of intellectual exercises are adapted, and each series of exercises is so graduated to the next series above, that the subject of them may be easily led from one to the other.

The question should always be: what is the practical value of any proposed mode of instruction?

All our exercises are made subordinate to, and to terminate in, a capacity and disposition for some form of industry. It is our effort to surround the pupil with influence of a refining and elevating character, both in and out of the school room; and in order to accomplish this, the best class of teachers and assistants are employed.

The Institution combines in its organization both the family and the school, the children being four or five hours each day in charge of a teacher, during the remainder under the care of the Matron and her attendants. The last mentioned attends them in all other than school hours, in their rising, dressing, washing, bathing, at their meals, and their amusements, and with a certain portion in their household or other industrial occupations, watching their habits, and teaching them, as far as possible, self dependence.

In the school-room, it is the effort of the teacher to apply, with patience and kindness, a proper system of instruction, from physical exercise to other suitable educational means, such as her ingenuity may devise or may be laid down for her in a carefully prepared programme of exercises.

The idiot, like the infant of a very tender age, must receive instruction suited, in kind and method, to his capacity. He exhibits, like all other children in the same grade of development, in his physical and mental manifestations and predilections, the kind of instruction and training he most needs. There are internal impulses which prompt him to satisfy both his physical and mental cravings; and by carefully watching the outward play of these impulses, we may be guided in selecting the most appropriate means and modes of educating him. Owing to his aversion to exertion, he must be constantly watched and stimulated.

Most of the exercises in the school room, besides the refining influence and example of the properly qualified and patient teacher, are designed to fix the attention, to concentrate the powers and faculties of the mind, and bring them under the subjection of the will.

It is well known that by physical exercise, provided the waste from the muscular action is duly supplied, the vital force of the body is raised, and a healthy condition of the whole system induced; the brain is relieved of any superabundance of blood, is cleared for action; it is also one of the best means to first develop the power of attention. For this purpose, a series of ladders in various positions, wooden and iron dumb bells, balance poles, bars, and such other appliances as are found in a well arranged gymnasium, are used.

The object system of instruction is adopted in our school room, as one of the best means of developing the class of minds we have to deal with. Object lessons supply a great want in elementary instruction. A child's first intellectual impressions are learned wholly in connection with objects. They seem to lead him methodically in the way nature indicates he should be taught. Endeavoring to follow nature, in this respect, we cultivate the faculty of observation.

It may be of interest to mention, in detail, some of the methods and appliances adopted in this and similar Institutions. Our means being very limited, we are unable to supply this Institution with all the varied and valuable apparatus to be found in the older and larger establishments of this nature. At the opening of school each day, the children, in a reverential attitude, repeat with the teacher, in concert, a simple prayer in verse or the Lord's prayer. The first means adopted, as has before been suggested, are physical exercises. These comprise, besides those already mentioned, what are called general exercises, various movements of the body and limbs, which are calculated to arouse and fix the attention; marching and keeping time with motions of hands and feet to music.

Music seems to have a remarkable effect upon some of our pupils, and is a very important element in our system of instruction. Nearly all are fond of music, and when hearing others, try to sing themselves simple songs and hymns, which not only develop and educate the ear for music, but improve their knowledge and use of words. It has the same effect that it has on all others of the human race, that of refining and elevating their natures.

Those of the lowest grade are taught to distinguish varieties in form by blocks of different shapes made to fit corresponding cavities in boards: definite ideas of form, size and color by colored cards of different shades and shapes, cups and balls, beads and charts. They are taught to fix the attention by stringing rings, buttons and beads.

A very large portion are defective in speech; these are exercised in articulation.

Children who cannot be taught to read by the ordinary method, are, very often, by what is known as the "word method," and it is generally adopted, and has proved very successful with our pupils.

The power of attention is trained to distinguish outlines, and the faculty of imitation is exercised by drawing upon black-boards and slates, lines, perpendicular, horizontal and parallel, squares, angles, curves, and various simple figures, until the hand is considerably familiar with the crayon and the pecil. They are next taught to form, from copies written before them, letters, words and simple sentences, until, in many cases, a good degree in penmanship is acquired.

The process of education seems to be that we first acquire certain intuitions from outward nature, through the senses. These the reasoning powers arrange and combine, and as the circle of observation enlarges and becomes general, the powers of comparison and combination enable us to form conceptions, more or less imperfect, of things or actions which are merely related to us, or of which we read, but of which we have no positive observation. If we follow the course thus marked out for us, and labor to the end that our pupils acquire correct ideas of things around them, which their natural impulses seem to urge them to, the exercise of this good and useful instinct, divinely implanted, will become a habit if encouraged and strengthened, but will diminish and cease, if checked and neglected.

If we begin, from the first, with things, and go then to words, the path of the learner may be made more easy and pleasant. To do this methodically and regularly, is the first business of our teachers.

We begin by teaching real forms, real colors, and real things. Ideas of number are taught by counting and arranging objects, thoroughly drilling our pupils in real arithmetic. Two hours, on Sunday, are spent in the school room, by the Superintendent and teacher with all the children, in repeating prayers in concert, singing the familar sacred songs of other Sabbath schools, reading and talking about the characters of the Bible, and other appropriate religious exercises.

Enough has been said, however, of our method of instruction, to give a general idea of the ways and means adopted in ameliorating the condition of feeble-minded children. The more advanced are, in many instances, brought to a knowledge of grammar, geogrophy, arithmetic, to the branches ordinarily taught in grammar schools, and, in some instances, are led to the much higher courses of study, as will be shown in the results of efforts at other institutions, to be referred to hereafter. "We do not propose to create or supply faculties absolutely wanting, nor to bring all grades of idiocy to the same standard of development or discipline, nor to make them all capable of sustaining, creditably, all the relations of a social and moral life, but rather to give to dormant faculties the greatest practical development, and to apply those awakened faculties to a useful purpose, under the control of an aroused and disciplined will. At the basis of all our efforts lies the principle that the human attributes of intelligence, sensitivity and will are not absolutely wanting in an idiot, but dormant and undeveloped."

In making a statement of the progress of the pupils, and the results of the system of instruction pursued at this establishment, it is presumed that the testimony of the parents or friends of the pupils themselves will be the best evidence that we can offer.

This was obtained by sending blanks, with questions to be answered by friends—after the pupils had been at home during the Summer's vacation several weeks, and their friends had had opportunity to observe and compare their condition with what it was before they had been sent to the Institution.

These questions and answers, being too voluminous for the body of this report, will be found attached as an appendix.

The United States census of 1870 gives to the State of Illinois 1,244 idiots of all ages.

From returns received by the Secretary of the State Board of Public Charities, published in the first biennial report of that Board, there were reported to them by physicians of the State, the names of 1,738 idiotic persons in Illinois, and these names are recorded in the office of the Secretary of the Board. From those statistics as a basis, it is estimated in that report that the actual number of idiots in Illinois is 2,900, or 1-867 of the entire population of the State, which is a larger proportion even than that of the insane.

The Secretary states: "It is safe to say that the proportion of idiots in Illinois (and probably in other communities) is at least as large as that of the insane."

There are now ten Institutions in the United States for this class of children.

The largest is at Columbus, Ohio. It is a State Institution, and will accommodate 350 inmates.

The Pennsylvania Institution is located at Media, and has now 186 inmates.

There are two in New York: the New York State Asylum for Idiots, at Syracuse, has 180 pupils, and the New York City Asylum, located on Randall's Island, has 147 inmates, of which number 106 attend school.

In Massachusetts there are three Institutions. One at South Barton, supported by the State, has 106 inmates; one at Barre, a private asylum, has 75 inmates, and one at Fayville—(a private school, recently put in operation) number of pupils unknown.

In Connecticut there is an asylum located at Lakeville which has 53 pupils.

Kentucky has an Institution located at Frankfort, with 87 pupils.

The Illinois Institution has 71 pupils. The total number of imbecile children under instruction in Institutions, public and private, in the United States, is probably about 1,000.

The connection of this Institution with some one of the other charitable Institutions of the State seemed, in the outset, essential to its inauguration, for so little was known even of the number of this unfortunate class in the State, that it had to be grafted upon an older establishment, that it might be sustained and nourished, and developed by those who knew the importance of such a school, and who were familiar with the ways and means of directing and guiding the charitable impulses of the people of the State.

It was more natural, perhaps, that it should germinate from the Institution for the deaf and dumb, as numerous applications for, and the frequent admission of such cases into that Institution—children whose inability to talk was attributed to deafness, and consequently were considered suitable subjects for the deaf and dumb asylum—and the unfitness of that system of education for imbeciles, led the Principal and Directors of that Institution to see the necessity for the organization of a school for feeble-minded children.

Under the guardianship of the Directors of the Deaf and Dumb, this Institution has grown until its incorporation as an independent Institution was deemed by them essential to its best interests.

With its own Board of Trustees, devoted exclusively to the advancement of the interests of the Institution, it ought soon to enlarge its sphere of usefulness, and take equal rank with the other charitable Institutions of the State.

With our present buildings, (which were not designed originally for the purpose, and which are very much crowded,) the Institution cannot be expected to compare favorably in results with those that are provided with fine buildings, ample funds and surroundings well adapted to their wants.

I again desire to express my appreciation of the labors of all the officers, teachers, attendants and domestics who are engaged with me in this enterprise; for, from the faithful performance of their labors must result in a great measure the success of the Institution.

Again invoking the blessing of Him who " hath chosen the foolish things of the world to confound the wise," this report is

Respectfully submitted.

C. T. WILBUR, M. D.,
Superintendent.

FINANCIAL REPORT.

Receipts and Expenditures for the Year ending December 1, 1870.

RECEIPTS.

Cash remaining Dec. 1, 1870	$76 84
From State Treasury, for quarter ending Feb. 28, 1871	5,000 00
“ “ “ “ May 31, “	5,750 00
“ “ “ “ Aug. 31, “	5,750 00
“ “ “ “ Nov. 30, “	5,750 00
“ Pupils, for clothing and board during vacation	2,301 55
“ Sale of stock, etc.	394 85
Total	$25,023 24

EXPENDITURES.

PROVISIONS AND HOUSEHOLD SUPPLIES.

Beef, fresh, 4857 ℔	$579 78
“ salt, 1094 ℔	85 83
“ dried, 42¼ ℔	8 29
Butter, 1447½ ℔	393 70
Beans, 4 bus	12 90
Buckwheat, 1 bus	3 00
Bread	247 89
Crackers, 507 ℔	58 63
Cheese, 2602 ℔	54 15
Coffee, 655 ℔	189 26
Candles and oil	2 00
Cream tartar and soda	19 25
Cider, 10 gal	4 00
Extracts	12 35
Eggs, 1300 doz	189 30
Flour, 11,675 ℔	404 37
Fish, fresh	92 17
“ salt	76 99
Fruit, fresh	526 39
“ dried	102 13
Farina, 490 ℔	41 62
Ham, 1545¾ ℔	241 50
Hominy	15 25
Honey	2 10
Hops	1 25
Indigo and starch	33 80
Ice, 34,724 ℔	138 89
Lard, 932 ℔	111 20

Meal, 5 bus	$4 00
Macaroni	1 50
Molasses 552 gal	45 70
Mutton, 863½ lb	139 66
Potatoes and vegetables	498 54
Poultry	286 58
Pork, fresh, 693¾ lb	77 57
" salt, 20 lb	8 72
Pickles	13 70
Rice, 285 lb	25 86
Shanks, 74 lb	14 80
Sugar, 1736½ lb	252 89
Salt, 1100 lb	11 00
Spices	22 15
Soap	243 15
Tapioca	5 35
Tea, black, 43 lb	34 40
" green, 53 lb	80 00
Tongues and tripe	18 62
Vinegar, 69 gal	26 55
	$5,408 78

FURNITURE, BEDDING, Etc.

Barrels, tubs, buckets and baskets	$41 72
Brooms and brushes	97 71
Batting	34 18
Bed spreads	26 75
Buttons	17 88
Clothes-lines and pins	2 55
Carpeting, oilcloth and binding	66 84
Crash, 413½ yds	62 52
Calico, 558¾ "	70 61
Combs, 6½ doz	17 92
Clothing	212 59
Cambric, 97 yds	11 75
Cassimere, 115¾ yds	47 41
Clocks	15 90
Domestic, 757½ yds	142 07
Drilling, 34 yds	29 76
Delaine, 41½ "	18 42
Furniture	689 40
Flannel, 247 yds	113 52
Feathers	19 42
Gingham, 386¾ yds	60 15
Glass	28 08
Glassware	30 35
Hickory, 372 yds	8 63
Hose, 57 prs	40 33
Hoods	13 00
Hooks and eyes	30
Hardware	331 62
Knives and forks	99 06
Kitchen furniture	28 15
Linen table-cloths	30 14
Linen napkins	12 25
Mats and matting	36 15
Mattrasses	211 17
Plaid	4 43
Pins and needles	16 16
Queensware	42 97
Shoelaces	20 03
Shoes and repairs	221 17
Skirts	6 75
Stoneware	33 90

Towels	$47 75
Tapes and braids	6 30
Tweed, 3½ yds	2 45
Thread and trimmings	56 80
Ticking, 51 yds	15 13
	$3,242 22

STOCK AND STABLE.

Carriages	$500 00
Cows (three)	140 00
Feed—corn, oats and bran	254 48
Hay, 19,335 lb	141 10
Horses	300 00
Harness (two sets)	113 00
Pigs (twelve)	42 00
Repairing carriages, harness, horse-shoeing and blacksmithing	70 99
Straw	5 00
Wagons (one)	75 00
	$1,641 57

SALARIES, WAGES AND LABOR.

Salaries	$4,067 50
Wages	2,775 04
Labor	221 49
	$7,064 03

MISCELLANEOUS.

Apparatus for school-room	$145 35
Burial expenses	24 00
Books	189 75
Bath brick	2 00
Blacking	3 40
Chalk and crayons	2 50
Card board	7 40
Christmas presents	60 53
Drugs and medicines	158 15
Express	17 65
Freight	97 13
Fuel, wood, 96 cds	421 85
" coal, 3539½ bus	391 00
Furnaces (two)	600 00
Gas, 95,700 cubic ft	382 80
Gas fixtures	6 60
Garden tools	56 75
House rent	1,000 00
Ink, pens, penholders and pencils	21 60
Lumber	333 02
Lawn mower	30 00
Lime, 39½ bus	19 75
Ladders (four)	48 76
Matches	5 95
Machines	56 00
Plow and harrow	25 50
Postage	98 25
Piano repairing and tuning	16 00
Printing	39 50
Paints and oils	43 48
Plumbing and gas fitting	12 76
Plastering and brick laying	71 38
Repairs	60 00
Sponge	2 73
Sewing machines	4 75

Seeds (garden)	$24 51
Stationery	240 17
Stoves and repairs	457 52
Tree	1 50
Tileing	12 13
Traveling expenses	190 28
Trustees' expenses	159 25
Telegraphing	5 25
Wall paper	1 75
	$5,498 65
Total expenditures	$22,850 20

RECAPITULATION.

Total receipts from Dec. 1, 1870, to Dec. 1, 1871	$25,023 24
" disbursements for year ending Dec. 1, 1871	22,850 20
Cash remaining Dec. 1, 1871	$2,173 04

FURNITURE AND INSURANCE FUND.

RECEIPTS.

From State treasury, for quarter ending May 31, 1871	$125 00
" " " Aug. 31, 1871	125 00
" " " Nov. 30, 1871	125 00
Total receipts	$375 00
Total expenditure for insurance	338 24
	$36 76

Respectfully submitted.

C. T. WILBUR, M. D.,
Superintendent.

ACKNOWLEDGMENTS.

The Institution is indebted for the following contributions:

Publishers of Chicago Republican, for daily paper.
" Springfield Journal, " "
" Quincy Whig and Republican, weekly paper.
" Rock Island Argus, " "
" Central Christian Advocate, " "
" Northwestern " " " "
" Prairie Farmer, " "
" Jacksonville Sentinel, " "
" Ladies' Repository, monthly magazine.
" Golden Hours, " "
" Little Corporal " "
" Nursery, " "
" Child's World, for 60 copies of paper.
" Well Spring, 20 " "
" S. S. Advocate, " " "
" Good News, " " "

Also to the officers of railroads in Illinois and other States for frequent favors.

APPENDIX.

It has been customary to send the children home two months each year, July and August, for a vacation.

In 1871, during the annual vacation, a printed formula of questions was sent to parents and friends of pupils, designed to call their attention to the particulars of each child's improvement, and to a more careful scrutiny of their general behavior and condition, in comparison with what it was when they were first sent to the Institution; with the request that they would answer the questions, and return the formula, that their testimony might be recorded, showing whether the results of the efforts to teach and train their children were satisfactory to them, and were fully answering their expectations.

Parents and friends are the best judges in many respects of the improvement in their children—as they were thoroughly familiar with their condition when they were sent to the Institution, and could contrast it with what it was while at home during the vacation, and thus be able to appreciate improvement or beneficial results if any had taken place.

It must be remembered, that many of the cases were taken on trial, and were found to be custodial cases, and were not the best subjects for the school-room; even these, however, have been benefited to a greater or less extent, but the real aim and design of this Institution has been to educate the better class of imbecile children—those who were likely to improve to the most profitable extent.

I will now introduce some of the questions asked and the answers received in some twenty or thirty of the cases, giving the exact answers of the parties, as they are now on file in the Institution, in the hand-writing of their parents or friends. The length of time these children were in the school varied from two months to three years, averaging about eighteen months each.

Question—"Is there any improvement in his or her personal appearance, or does his or her countenance indicate any more intelligence."

Answers—“Greatly improved in this respect.”—“I think there is.”—“There is some improvement in her appearance, and her countenance is more intelligent.”—“Yes.”—“His personal appearance is very much improved, his intelligent appearance is much better.”—“He looks more intelligent.”—“We think there is.”—“I think he has improved in appearance; the neighbors here think there is an improvement in him.”—“Yes, she is more modest and more ladylike in all her ways.”—“Some improvement.”—“About the same.”—“Improved in personal appearance.”—“Yes.”—“He has improved in personal appearance.”—“At times he looks well and intelligent, but when tired his countenance falls into the imbecile look worn by such persons.”—“Yes, very much.”—“I think his countenance indicates more intelligence.”—“There is improvement in her personal appearance.”—“Yes.”—“Yes, I think there is.”—“I think it does; he always has a good countenance.”—“Yes.”—“Yes.”—“Yes.”—“I answer both affirmatively.”—“Very great improvement in his personal appearance.”—“There is a great improvement in both.”—“Yes, very much.”—“Yes.”—“In personal appearance the improvement is very great, and the improvement correspondingly indicated in the countenance.”—“There is some improvement.”—“There is; it does.”—“Yes.”—“I think it does.”—“Very great improvement in personal appearance; countenance more intelligent.”—“No marked change.”

Q—“Is there any more control of the muscular system in his or her case?”

A—“There is.”—“I think there is.”—“There is improvement in the muscular system.”—“Yes.”—“He has better use of himself.”—“There is some.”—“He has.”—“There is; he is quite handy about some kinds of work.”—“Yes, particularly in her arms.”—“There is.”—“The same as before.”—“More easily controlled.”—“Yes.”—“I think there is.”—“Yes.”—“There is.”—“There is a great deal of improvement.”—“I do not think I can see any difference.”—“There is.”—“Yes.”—“Yes.”—“He always had good control of his limbs.”—“There is.”—“Yes.”—“Yes.”—“Yes, there is.”—“Yes, very much.”—“She is more energetic.”—“Much more, I think.”—“There is.”—“Yes.”—“Considerabl improvement in this respect.”—“I do not see any difference.”

Q—“Does he or she stand more firmly, or walk better?”

A—“She does.”—“She walks some better.”—“She stands mor erect; hence walks better.”—“Yes.”—“He does.”—“He does.”—“W think in this respect there has been no improvement.”—“No.”—“Ca not see any difference.”—“Stands more straighter; walks about th same.”—“No change perceptible.”—“Yes.”—“He always walked wel but stands more firmly."—"I think he does."—"Yes."—"He walks straighter."—"She does."—"Yes."—"Yes."—"He does walk better." —"He is now and has been all right in that direction."—"Yes."—"Yes."—"Yes, I think she does."—"Always could walk firmly."—"She walks better, but is stooped-shouldered."—"She stands more firmly; do not perceive any difference in walking."—"He stands more firmly, and walks much better."—"He does."—"Yes."—"We think he walks better."—"I think not."

Q—"Has he or she more control of his or her arms and hands than formerly?"

A—"Yes."—"She has more."—"There is decided improvement in the use of the hands and arms, etc., than formerly."—"Yes."—"He can use his arms better than he could two years since."—"About the same."—"In this I think he has improved."—"Yes, I think he has."—"Yes."—"She has."—"Uses his hands some better."—"Think he has." —"He has; will fold his arms when told to do so, and will use a knife and spoon while eating; this he never did before he entered the Institution."—"Yes."—"He has."—"He has."—"She has."—"Yes"—"Yes."—"There has been quite an improvement in this particular."—"Yes."—"Yes."—"She appears to have more strength in her arms and hands, and uses them to a better advantage."—"Yes."—"She always had good use of them."—"Very much more."—"He has much more control of himself in every way, hands arms and feet, and generally more of his person."—"He has."—"Yes."—"I think he has."—"Arms and hands always strong; he controls them better than formerly."

Q—"Is he or she less nervous?"

A—"She is."—"Yes."—"The nervous system has much improved." —"No."—"About the same."—"She is."—"Think he is."—"Is not as nervous as he used to be."—"Yes."—"He is."—"Yes."—"Some less nervous."—"There is a great improvement in this respect."—"Yes."—"He is."—"Yes."—"Yes."—"She is."—"Yes."—"Her nerves seem much stronger."—"Very much less; the improvement in this respect is beyond anything that we had any reason to expect or hope for."—"He is much improved in his nervous system."—"Never nervous."—"Yes, he is less nervous than formerly."—"He is much less nervous."

Q—"Is he or she less awkward?"

A—"Much less awkward."—"Yes."—"But little improvement."—"Yes."—"No."—"He is."—"In this his improvement is very plainly to be seen."—"I think he is."—"Yes."—"Not much improvement."—"He is."—"He is."—"There may be a slight improvement."—"Yes." —"He is."—"Yes, very much."—"I think he is."—"She is."—"Yes."

—"Yes."—"There is more improvement in that than any other."—"About the same."—"Yes."—"Yes."—"Yes, sir."—"Yes."—"She is; our friends notice the change."—"Yes."—"Much less."—"He is."—"Yes."—"Yes, he is not as awkward; there is quite an improvement in that respect."—"We find considerable improvement in this respect." —"No."

Q—"Is he or she more active?"

A—"Yes."—"She is."—"No improvement, except in walking."—"Yes."—"He is."—"Yes."—"No."—"She is."—"He is."—"Perceive no change."—"Yes."—"Yes."—"I think she is, in every respect."—"His actions much more natural."—"Much more so."—"Yes."—"Yes." —"He is."—"Yes."—"Rather more active."—"No."

Q—"Is he or she more fond of childish sports?"

A—"Yes."—"She is."—"She loves to play with children, and always did."—"Yes."—"He is more fond of sport."—"He is."—"He is." —"I don't think he is."—"No."—"She is."—"About the same." —"Think not."—"No, not near so fond."—"Cannot see any improvement in this respect."—"No."—"He is very fond of labor, but cares little for play."—"He is."—"He is."—"She does not care so much for childish sports, but had rather be employed in something useful, as with books."—"Some."—"About the same."—"I think he is; takes more notice of them."—"He is."—"Yes."—"Yes."—"Yes, she is."—"Yes."—"She is more womanly."—"Yes, she was always fond of children's sports."—"He is more fond of company, and now loves to play with children, a thing he would not do before he went to the Institution."—"Yes."—"Yes, he is."—"Yes."—"No."

Q—"Is there any improvement in waiting upon himself or herself, or behavior at the table; if so, in what respect?"

A—"Great improvement in waiting upon herself, and appearance at table."—"Yes, less awkward."—"Her manners at table are improved, as she uses her knife and fork so as to eat in a more genteel manner." —"Yes."—"His behavior is good at the table, as he will wait to be helped, and ask in a mannerly way."—"Yes, there is a general improvement."—"In using his knife and fork his improvement is marked." "There is; he seems to try to observe and conform to the actions of others; he has a great appetite, and no judgment to control it."—"No, not any."—"There is some improvement in both respects."—"Feeds himself better."—"Decided improvement."—"Yes, a great deal."—"A decided improvement; he will wait until told to commence eating; uses his fork and spoon well."—"Yes, behaves well at the table, in every respect."—"He waits upon himself nicely, and eats his food well at the table."—"Before he went there he could not wait upon himself; now he does almost everything for himself."—"A decided improvement; he is more mannerly at the table."—"There is a great improvement in her appearance at the table."—"The same."—"More refined."—"He does all of them himself, without any trouble."—"In this there has been great improvement, especially his actions at the table; could not reasonably expect more in the time."—"Yes, she behaves well at the table."—"Yes."—"Her behavior is better, and she waits to be waited upon."—"Yes, he behaves well at the table; asks for anything he wants; great improvement in that respect."—"I do not see any there."—"Yes, she eats more neatly."—"He behaves well at the table, and is much improved in the use of the knife and fork, and in personal cleanliness while eating."—"His manners are more genteel than formerly, and he looks around less while eating."—"There is some little."—"Yes."—"He can wait on himself better, and behaves better at the table."—"Great improvement in waiting upon himself, in every respect."—"He does wait on himself better, and has improved in politeness of behavior."

Q—"Can he or she assist more in dressing or undressing, or in taking any other care of himself or herself? If so, to what extent and in what respect?"

A—"Can dress and undress herself, wash and comb her hair."—"About the same."—"Yes, she can dress and undress much better than formerly, and dress and undress the children much better."—"Yes; at first could not dress herself; she now can."—"He can dress himself and undress."—"He is able to dress himself."—"Much more than before."—"About the same as before going to the Institution."—"She can dress herself more readily."—"He puts on his hat and pulls off his pants; he also assists more in dressing himself."—"He always, since an infant, could dress and undress himself as well as most children."—"Yes."—"He cannot dress himself, but stands very quietly for others to do it; will let you wash and comb his hair, and seems pleased to have it done; this he would never do before, without trouble."—"Yes."—"He undresses himself at night, and can partially dress himself in the morning."—"He dresses himself now altogether."—"I do not see any difference in that respect."—"She take the entire care of herself in dressing and undressing, washing and combing, and does it well."—"Considerably; he dresses himself very well."—"He could dress and undress before he went, but I think is more particular about how his clothes look and fit him."—"He can dress himself well or undress without any trouble; waits on himself altogether."—"Not much."—

"Yes, in many respects."—"Yes."—"Yes, sir, she dresses herself, with the exception of fastening her clothes."—"She can dress and undress herself without assistance."—"Yes, very much; she makes her bed, sweeps her room, washes herself, combs her hair, and puts her comb into its place."—"The improvement in this respect is not quite so readily perceived as in others, as she could dress and undress tolerably well at home, or before she went to school, but seems to be in a corresponding degree."—"Yes."—"Yes, he can dress and undress himself quite readily, something he never did before he went to the Institution."—"Marked improvement in every respect."—"He dresses and undresses without help; this he did not do when he entered the Institution."

Q—"Is there any improvement in habits of personal cleanliness; any more regard for neatness in dress?

A—"Yes, she is particular about dress."—"She is more particular."—"There is more regard manifested by her in her personal appearance."—"Yes."—"There is."—"He enjoys being fixed up."—"None that is visible."—"Yes, there is an improvement; he takes pains to keep himself clean, and is very fond of bathing."—"There is improvement in both ways."—"There is some improvement in cleanliness."—"A decided improvement."—"I think there is, in regard to cleanliness, some improvement; as regards dress, keeps more cleanly."—"He does."—"I think he is rather more cleanly."—"She is particular to be always washed clean, and is fond of being clad in clean clothes."—"Yes."—"Yes."—"Very much."—"Yes, in the last year there has been."—"Yes."—"Yes."—"There is, to some extent; she always was very fond of dress."—"Very much more in his habits of personal cleanliness; is very fond of being dressed."—"She is much more."—"Yes."—"This question I can answer in the affirmative: when he went to the Institution, or rather before he went, he was so averse to water that we found it impossible to keep him clean; after being there one term, we found on his coming home at vacation, to our great delight, that he was as averse to dirt as he had been to water; he is now quite neat, both in clothing and person."—"I think there is."—"Yes."—"There is quite an improvement in this respect; is more cleanly in habits."—"Great improvement in habits of cleanliness."—"He was always careful and neat in these habits."

Q—"Is he or she lest troublesome than formerly?"

A—"Yes."—"She is."—"Yes."—"Yes."—"He is."—"He is."—"About the same."—"He is less troublesome."—"About as she was."—"Very little change."—"He is."—"He certainly is."—"Yes."—"He is; has never attempted to run off since he came home."—"He requires less care."—"Yes."—"Yes."—"A great deal less troublesome."—"She is."—"Yes."—"About the same."—"I think he minds better than he did."—"Very much."—"Yes, much less."—"Yes."—"Yes, sir."—"Very much less."—"We never thought her troublesome."—"Yes." "He is comparatively no trouble at all; he is so quiet and good-natured and obedient that it is more a pleasure than a trouble to have him about the house."—"A little less."—"Never was troublesome."—"He is now very little trouble in comparison to what he was formerly."—"Never was troublesome."

Q—"Is there any improvement in speech; that is, does he or she talk distinctly?"

A—"She does."—"I think she does."—"Yes."—"No."—"He can be more plainly understood in his speech."—"No improvement can we see, which we feel sorry for, for it is one of our greatest desires."—"He talks less and more distinctly."—"Yes, she talks more distinctly and properly."—"She does."—"There is none."—"Quite an improvement."—"Do not think there is."—"He has never spoken a word."—"Talks less and speaks more distinctly."—"There is some; he speaks some words that he did not when he left home."—"There is a little improvement."—"Some improvement in speech."—"Yes, the neighbors say."—"There is, yes."—"There is, a little; he speaks some better; talks more than he did."—"No."—"She talks more distinctly."—"Yes, he speaks more distinctly and more intelligently."—"I think he talks much more distinctly."—"There is very little change."—"Talks more distinctly."—"He does not talk much; I do not know that he talks any more, but what he does say is more distinct."—"A slight improvement."—"Considerable."—"Some."—"He talks more and more distinctly, but there is not so much improvement in this as we hoped for."—"But little if any difference."

Q—"Has he or she more idea of language; that is, does he or she understand any more what is said to him or her than formerly?"

A—"Decidedly more."—"She does."—"Yes."—"Yes."—"I think a little."—"I think he does understand better what is said to him, but is very forgetful."—"Yes."—"Her understanding is better."—"Has much better idea of language."—"Yes."—"He does understand what is said to him much better."—"Yes."—"I don't know that he does."—"A little."—"I do not know that he does."—"The greatest improvement we have noticed is in her speech, and understanding what others say; she understands all that is said to her."—"Considerably."—"About the same; can understand pretty well what is said to him."—"He does a good deal better; he knows all you say to him; understands well."—

"Yes, in the last year there has been the most satisfactory advancement in his powers of understanding."—"She does somewhat."—"Yes, he manifests more reason."—"He always did understand what was said to him."—"There is a decided improvement."—"We think so."—"Seems to understand much more readily than formerly."—"He makes more signs."—"He has made some improvement."—"Much more."—"I think he improves some in that respect."—"He continues to improve in these respects every year."—"I am sure he does."

Q—"Does he or she use a greater variety of words?"

A—"Yes."—"Some more."—"He does."—"He does."—"No, he uses less words."—"No."—"She does."—"He does not."—"He does." —"Yes."—"No."—"Yes."—"He uses some words that he did not before."—"She does."—"He does."—"I think he does."—"He uses a greater amount."—"He does not talk."—"Yes."—"He does."—"Yes." —"She does."—"Yes."—"Some."—"Yes, rather more."—"Yes."— "Yes, much greater."

Q—"Does he or she use more connected sentences?"

A—"Yes."—"She does."—"Yes, in some respects."—"Does not."— "We believe not."—"I think she does."—"She does."—"He does not." —"He does."—"Yes."—"No."—"Yes."—"Some."—"She does."— "Yes, he does."—"Yes."—"He understands them better than he did." —"Yes."—"Decidedly."—"Expresses himself much better, and connects sentences well."—Yes."—"A great many more."—"Yes."—No." —"Yes, at times."—"Yes."

Q—"Is his or her memory improved?"

A—"It is."—"Yes."—"Yes."—"Can't say."—"His memory is improved."—"It has improved."—"A little."—"I don't think it is."—"Yes, some."—"Have not been able to see any change."—"In some things." —"It is."—"I think it has, some."—"Think his memory better, so far as obedience is required."—"Always good."—"He always had a remarkable memory."—"His memory was very good, but has improved some." —"He knew everything and the name of everything when he came home."—"It is; her memory is very good."—"Not much."—"Always had a good memory of household affairs; think it cultivated, somewhat, on general topics."—"Always was good."—"I think so."—"Her memory of locality, faces and names always good."—"Yes."—"I think it has."—"His memory always was good."—"Very much."—"I think so; very much."—"I think it is."—"It is."—"Yes."—"Some."—"His memory seemed always pretty good."

Q—"Has he or she more idea of forms and colors?"

A—"Yes."—"Yes."—"I believe she has."—"He has."—"I can't see that he has."—"She has."—"He has."—"Yes."—"No."—"Yes." —"Yes."—"I cannot see that he has."—"She has."—"Yes, he has." —"Yes."—"He has."—"Yes."—"I think he has."—"She has, undoubtedly."—"She seems to ask more questions about them."—"I don't know."—"Yes."—"Yes."—"I think there is improvement in his ideas of forms; I think he could always discriminate between colors."

Q—"Does he or she notice more what is going on about him or her; that is, does he or she use his or her senses more?"

A—"She does."—"I think she does."—"Yes."—"Yes."—"He is quicker to notice what is going on about him."—"In this his improvement and progress is very good; much better than could be expected, considering his circumstances."—"Yes."—"She does."—"The improvement is slight."—"He does."—"Yes."—"I think he does."— "Yes."—"He always observes very closely what is transpiring about him."—"Yes."—"Some."—"I think."—"She does."—"Considerable." —"Yes."—"He does."—"Very much more."—"Yes, a good deal more."—"Yes."—"She is very quick to notice, and her senses seem quite bright."—"She does, and is much more company for me."— "Yes."—"Much more."—"He does."—"He does."—"Yes."—"He notices more what is going on around than he used to; has a great idea of learning things."—"Marked improvement."—"Cannot see that he does."

Q—"Has he or she made any progress in common school studies, as reading, writing, geography, and the relations of numbers?"

A—"Have not examined her in this respect."—"Some little."—"His education is considerably improved."—"He has improved in reading and spelling."—"He has made some progress in learning."—"She has made improvement in all of them."—"Has learned some in counting." —"Yes."—"Yes."—"Yes."—"Some, in numbers."—"Yes, he has made a good deal of improvement."—"A little."—"Very much; he loves to read, and knows, when through reading, what he has been reading about."—"Yes, very much progress, particularly in geography."— "Knows some words."—"He has not advanced as far as books."—"He has learned part of the alphabet."—"Yes."—"There has been marked improvement."

Q—"Is he or she more capable of any useful occupation?"

A—"She is, and now assists about household duties. This she had never done until she had been in the Institution."—"She has more correct conception of how things should be done."—"He is."—"None, nor could we expect it."—"I think perhaps he is; he is older and the trai ing he has had makes him more useful than he was when he went into the school."—"Yes."—"Think he is."—"Yes."—"Yes; he can be made useful in running upon errands, to bring any articles wanted; will do it as quickly as any bright child."—"She is."—"She does a good deal of work, and does it well."—"Yes, he is."—"Yes."—"Minds better what is told him than ever."—"Yes."—"Yes."—"He is."—"Yes, sir."—"Yes, much more."—"I think she is; she can sew better and is neater about housework."—"Yes; can wash dishes and do them up quick."—"Yes; he does many things with considerable judgment."—"He works well."—"Can do most anything anybody else can now, if you show him how."—"From present indications we have grounds for hope."—"In sofar as there has been improvement he is doubtless more capable of usefulness.'

Q—"Is his or her attention more readily fixed upon any object?"

A—"Yes."—"About the same, but converses with more sense than formerly."—"Yes, it is."—"Yes."—"It is."—"He is more quiet, and stays in the house better."—"It is."—"Yes."—"I think it is."—"Yes."—"I think it is."—"To a great extent."—"Yes."—"Yes."—"Yes."—"He is more attentive to what he is doing; we are much encouraged in this respect."—"It is, to a certain extent."—"Yes."—"She is more discerning."—"It is."—"It is."—"Yes."—"It really seems to be."—"Much more."—"Yes."

Q—"Has he or she any more judgment in practical matters of every-day life?"

A—"We think her much improved in this respect."—"He has."—"He has, some more."—"Yes."—"She has."—"He has."—"Yes."—"Yes."—"Yes."—"He uses some more judgment."—"She has, very much more."—"I think he has."—"Yes."—"I think she has."—"I think he has."—"Her judgment is better than formerly."—"I think he has."—"She has."—"I think she has."—"Much more."—"Yes."—"Yes."—"Yes, I think there is some improvement."—"In many things we find the judgment improved."—"He does certainly progress in his perception of things that are proper or improper, and often gives a reason for his judgment or conviction."

Q—"Has he or she more self-control?"

A—"In short, she is much improved in every respect."—"In som respects."—"Yes."—"He has much better control of himself."—"H has."—"Considerable."—"Yes."—"I think he has."—"Yes."—"Sh has."—"Some better."—He has."—"Yes."—"He has."—"I think h has; his paroxysms of anger are not so frequent."—"Yes."—"He has." —"Yes."—"He has."—"Yes."—"A great deal."—"Yes, he has."—"Yes, very much more."—"Considerable more."—"Yes."—"She has." —"Think she has."—"Very much more."—"He has."—"Yes."—"I think he has."—"Yes."—"Perhaps not."

Q—"Has he or she any more steadiness of purpose, or perseverance in accomplishing anything he or she wishes, or in obeying any command?"

A—"Yes."—"Yes, she minds quite readily."—"A decided improvement."—"Yes."—"He has."—"I think he has."—"John is very good to mind, and will accomplish anything he can when set about it."—"Yes."—"Obeys commands better."—"He has."—"Yes."—"He is much more obedient than formerly."—"Yes."—"Yes."—"I think he has."—"Yes."—"He has."—"Never gives up till it is finished."—"He is much more obedient."—"Yes."—"Yes."—"She is very persevering, and still she is easier governed than she previously has been."—"Yes, he has."—"She is more persevering and obedient."—"Yes, very much." —"I think I can see that he has."—"He has."—"Yes."—"Yes, there is, and he obeys very readily what we tell him."—"He always evinced great perseverance in obeying commands; he is much more ready when he understands what is required."

Q—"Is he or she more quiet in his or her manner?"

A—"Yes."—"She is."—"Yes."—"Yes."—"His manners are much improved."—"Yes."—"There is a great deal of change in him in this respect; every one that was acquainted with him notices it."—"Yes." —"He is."—"He is."—"Yes, a great deal."—"Yes, he is."—"Full as much as could be expected."—A great deal more steady."—"Yes, he is very quiet."—"Yes, very much more."—"He is, decidedly."—"Yes, sir, she is very much reformed."—"Very much more."—"She is."—"Yes."—"He is so much more quiet and easy in his manners, that every one is surprised at the change that knew him."—"He is."—"Yes." —"He is a great deal more quiet than he used to be, or rather was, when he first came home."—"Yes."

Q—"Is he or she more obedient?"

A—"Yes."—"Yes."—"Yes."—"Yes, decidedly."—"He is."—"A little."—"Yes."—"Yes."—"He is."—"He is."—"Yes."—"A great deal."—"Yes."—"Yes."—"He does."—"I think he is."—"She is very obedient."—"Considerable."—"Yes."—"A little better."—"Yes."—"Yes, much more."—"He is more obedient than formerly."—"She is much more so than I ever expected."—"Yes."—"She is."—"Very much."—"We had about lost control of him before he went to the

Institution; now he is very obedient."—"Yes."—"Yes."—"Great improvement in this."

Q—"Is he or she more affectionate and good-tempered?"

A—"She is."—"She is."—"Yes."—"I think she is."—"His temper is more easily controlled."—"I also believe he has."—"Yes, a great deal."—"His disposition is much improved."—"Yes."—"He is."—"Yes, he is."—"About the same."—"I think he is."—"His temper is better."—"I was pleased to find her improving in that respect."—"Yes."—"She is."—"Yes, very much."—"I hardly know how to answer that question; the change for the better is so great, and we are so delighted; seems such a blessing to us and our other children; I just say that in this thing he is made new."—"Some improvement."—"Yes."—"He is very affectionate, generally, and his temper easily subdued by kind treatment; we think he has improved in this respect."—"Was always affectionate and good tempered."

Q—"Does he or she recognize more clearly the distinctions between right and wrong?"

A—"Yes."—"Yes."—"He does."—"I can say he has improved in this."—"She does."—"She does."—"He does."—"Yes, a great deal better."—"As he cannot talk it is hard to tell, but when in mischief will stop very quickly if any one approaches or speaks to him."—"Yes."—"Yes, he does."—"He does."—"She can distinguish between right and wrong very readily."—"To a great extent."—"Yes."—"He does."—"I think he does, decidedly."—"Yes, sir."—"I think he does."—"She has a great desire to be good."—"He certainly does."—"Yes."—"Yes, I think he does."—"He seems to know better what is required of him, and I think he feels what is right, because he is generally prompt to obey."

Q—"In what respect are you disappointed in his or her progress since he or she came to the Institution?"

A—"In that she made any improvement whatever; I looked upon her case as hopeless, but consider her now greatly improved in every respect."—"Agreeably disappointed, especially in the self-control she manifests, particularly in the control of her temper."—"None whatever."—"His education is far better than I expected to find."—"In no respect."—"We are a little disappointed in regard to his talking, but we feel confident he has done all it is possible for him to do, therefore we are very well pleased."—"I am disappointed in nothing; I never expected he would make any great progress in learning, but hoped he would improve so as to be able to take care of himself; this he may do yet if he could have the further benefit of the school."—"We are not disappointed; she has made as much progress as we expected her to make the first year."—"We are not disappointed in anything, except in the nature of his disease; we were in hopes his was not a case of epilepsy, which seems to be the case; we think there is a marked improvement in him, in several respects, for which we feel thankful to the Institution."—"Am not disappointed in any way, but am greatly surprised at the improvement she has made; am very much pleased, indeed, with your care of her, and with the improvement you have made in her."—"We are not disappointed in any respect, whatever, in regard to his improvement; should have been pleased if he could have gone back to the Institution, but will ever feel grateful for what has been done for him."—"In no respect."—"I am well pleased with his progress, the care of his clothing and person; he was never in a healthier or better state than at present, and I feel that all has been done for him that could be."—"Had no idea that there would be as much improvement."—"I am only disappointed in her having improved so much; I had no idea that the term of any Institution would improve such a child so much, and you have my heartiest thanks and prayers that you may be blessed in the work in which you are engaged."—"In no respect; he has improved a great deal; I am thankful to you for your kindness to my son, and for his wonderful improvement."—"In none, whatever; think he has improved as much as could be expected, in any particular respect; am sorry that he could not have had the advantage when younger."—"He is better in every respect; a great improvement in him; more than I ever thought for."—"I am not disappointed; there has been as great improvement in him as I could possibly expect."—"We are well satisfied in every respect, but in common school studies; we are decidedly pleased with his progress, and if he improves the next year as he has the last, it will be a matter of much rejoicing to the hearts of his parents."—"There is much more improvement made in her condition than I could, under any circumstances, have expected; I will, without hesitation, say that I was very agreeably surprised at her improvement; accept an anxious parent's sincere thanks, and believe me to be truly sensible of the good you are doing."—"I am not disappointed in his progress, but on the other hand am greatly pleased and gratified with his improvement, in all respects; I am satisfied the Institution has been of incalculable benefit to him, in every respect."—"I am not disappointed in anything but learning to count; she is very dull at that."—"Happily disappointed that she has made so much improvement."—"The progress has been greater than I expected; in that I am very agreeably disappointed, and in no other way are we disappointed."

—"In none."—"Agreeably disappointed."—"We are not disappointed in any respect; think he has done as well as could be expected for the length of time that he has been at the Institution."—"We are not disappointed in his progress, in any respect, except in his use of language; we had hoped he would learn to talk more; we again feel it our duty to renew our heartfelt thanks to the officers and employees of the school for their noble efforts in behalf of these poor unfortunates."—"Our appreciation of the actual labor required to educate this class of minds was very imperfect, and we are only beginning to see the imperative necessity of the work."

AN ACT

INCORPORATING THE ILLINOIS INSTITUTION FOR THE EDUCATION OF FEEBLE-MINDED CHILDREN.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That for the care, support, education and training of idiotic and imbecile children and youth, a corporation is hereby created, to be known by the name of the "Illinois Institution for the Education of Feeble-Minded Children," and to have perpetual succession, with power to contract and be contracted with, to sue and be sued, to plead and be impleaded, to receive by any legal mode of transfer or conveyance, and have, hold and use property of every description, and to sell and convey the same; also to have and use a common seal, with power to change the same; also, to adopt by-laws, rules and regulations for the government of its members, officers, agents, employees and inmates: *Provided*, that such by-laws shall not be contrary to the Constitution of the State of Illinois, or of the United States.

§ 2. The object of said corporation shall be to promote, by all proper and feasible means, the intellectual, moral and physical culture of that unfortunate portion of the community who have been born, or by disease have become idiotic, imbecile or feeble-minded, and by a judicious and well adapted course of instruction, and training and management, to ameliorate their condition, and to develop as much as possible their intellectual faculties; to reclaim them from their hopeless condition, and fit them, as far as possible, for future usefulness in society.

§ 3. The number of trustees shall not exceed three, and not more than one member shall be appointed from any one county. Said trustees shall be appointed by the Governor, with the advice and consent of the Senate; shall serve without compensation; their term of service shall be six years respectively, except in case of the first board, one of whom shall be appointed for two years, one for four years, and one for six years from the passage of this act, and until their successors are appointed and qualified, and at the expiration of their respective terms of office the vacancies shall be filled for the full term. Should any vacancy occur by death, resgination or otherwise, such vacancy shall be filled by the Governor by an appointment for the unexpired term of the trustee whose place was thus vacated.

§ 4. The said trustees shall each be paid his traveling and personal expenses while in the service of the Institution. The said expenses shall be paid out of funds appropriated to said Institution only, as follows: The Auditor of Public Accounts shall issue his warrant upon the Treasurer in favor of each of such trustees for the amount of his actual expenses in his attendance upon said board of trustees, upon the filing in the office of the said Auditor of the voucher of the said trustee, setting forth in detail the amount and nature of each and every such expense, and the Auditor shall charge the amount of the said warrant to the fund appropriated to the said Institution.

§ 5. No member of said board shall be employed or appointed in or to any office or place under the authority of the board of which he is a member; nor shall any member of said board be directly or indirectly interested in any contract to be made by said board for any purpose whatever.

§ 6. The said trustees shall have charge of the general interests of the Institution, and shall appoint a superintendent, who shall be a physician, and fix the amount of his salary, who, with the consent of said board, shall employ all necessary assistants, teachers, and other employees. The trustees shall make such by-laws for the government of the Institution as shall be necessary for the successful attainment of the objects of the corporation. The said trustees, or a majority of them, when convened, shall constitute a board, and shall have power to appoint a president, a treasurer, and a secretary (the president to be selected from their own number, and the superintendent to serve, ex-officio, as secretary) and to prescribe their duties and fix their terms of service. They shall require the Treasurer, from time to time, to give bonds to the People of the State of Illinois for the faithful discharge of the duties of his office; they shall determine the salaries of such other officers and assistants as may be necessary to the able and economical administration of the affairs of the Institution.

§ 7. The Superintendent shall exercise entire official control over all subordinate officers and assistants in this Institution, and shall have entire direction of the duties of the same, and be responsible for their fidelity.

§ 8. Pupils or children placed in the Institution by parents and guardians, or other persons having rightful control, shall be required to conform to the rules and regulations of the Institution, as far as they may have ability.

§ 9. The board shall make annual reports to the Governor of the State, on or before the fifteenth of December, showing the number of applications received, the number of pupils under instruction, the number of pupils admitted, and the number of pupils discharged, during the year; also the progress and results of the system of instruction pursued at the Institution, and such general facts as may be instrumental in giving the people of the State of Illinois all information proper to be laid before them, together with a detailed financial statement of all moneys received and how they have been expended.

§ 10. The said trustees shall meet quarterly, when they shall examine and audit all the accounts of the Institution and make requisition on the Auditor of Public Accounts of the State of Illinois for funds required for use during the succeeding quarter, from funds which have been appropriated by the General Assembly for the use of the Institution: *Provided*, that the first quarterly installment of any such appropriation shall be paid in advance, but no further warrants shall be drawn for any succeeding installment until the Superintendent of said Institution shall have filed with the Auditor satisfactory vouchers, approved by the board of trustees, showing in detail each and every expenditure made out of the preceding installment.

§ 11. In all cases where the parents of the pupils sent to the Institution for the Education of Feeble-Minded Children, are too poor to furnish them with good and sufficient clothing and expenses for transportation from and to their homes, or where said pupils are without parents, and are unable to furnish themselves with such clothing and expenses for transportation, in all cases of pauper children who are idiotic or feeble-minded, the parents, guardians, or next friend of any such children, or any officer of the county or township in which such children may reside, may make application to the county court or board of supervisors of the county, and upon a decision by such county court or board of supervisors that such child or children are paupers and proper subjects for the care of this Institution, an order shall be passed to that effect, and the judge of the county court of the county from which they are sent shall certify the same to the superintendent, who shall procure such necessary clothing and transportation, and charge the same to said county, and present the account to the Auditor of Public Accounts, who thereupon shall draw upon the county treasurer for the amount so charged to the county; and the said county shall annually assess and collect by tax the amount necessary to pay said order or orders; and if said county shall fail so to do, the circuit court in said county shall, on application therefor, compel the same by mandamus.

§ 12. The board of directors of the Illinois Institution for the Education of the Deaf and Dumb shall transfer all the property now in their possession, which has been purchased or erected for and is now in use by the Illinois Institution for the Education of Feeble-Minded Children; also all funds unexpended from appropriations made by the General Assembly for said Institution for Feeble-Minded Children, to the board of trustees of the Illinois Institution for the Education of Feeble-Minded Children, who are hereby authorized to receive all such property and funds, and who shall succeed to all the rights and powers of the directors of the Illinois Institution for the Education of the Deaf and Dumb, so far as they extend to the Illinois Institution for the Education of Feeble-Minded Children.

§ 13. The Auditor of Public Accounts is hereby authorized and required to draw his warrants on the Treasurer of State for all sums which may be appropriated or are undrawn or unexpended, which have been appropriated for the use of said Institution, by the General Assembly, upon orders of the board of trustees of the Illinois Institution for the Education of Feeble-Minded Children, when signed by the president and attested by the secretary of said board with the seal of the Institution.

§ 14. This act shall take effect and be in force on the first day of July, one thousand eight hundred and seventy-one.

Approved, April 6th, 1871.

CENSUS OF IDIOTS IN ILLINOIS.

TAKEN FROM THE FIRST BIENNIAL REPORT OF THE STATE BOARD OF PUBLIC CHARITIES, DECEMBER, 1870.

At the request of Governor Palmer, the Board of Public Charities, upon its organization, decided to pay attention first to the subject of insanity and idiocy.

The proportion of idiots, according to the United States census of 1860, was stated at 588 : 1,711,951, or, 1 : 2,911.

The Board felt sure that this number fell far short of the true number. The result of an investigation, made under their authority, more than confirms this impression.

A blank was prepared, with spaces for names and other facts, and a copy of this blank was sent to every physician in the State of Illinois, whose name and residence could be obtained.

The number of idiots, reported by name, (all duplicates having been carefully sifted out,) is 1,738; or taking the population reported in the census of 1870 as the basis of calculation, 1 : 1,461 instead of 1 : 2,911 —the result given in the census of 1860. But even this number and proportion are too small, for in the first place many cases are, without doubt, unreported, as will be hereafter shown; and then, further, idiocy in the person of infants is undistinguishable.

In Table I, the total number given is manifestly much too small, owing to the absence of complete returns.

Of 4,773 physicians addressed, only 1,728 replied.

Cook county, with a population of 350,236, reports no more idiots than Morgan county, with a population of only 28,501. The same proportion in Cook as in Morgan would raise the total number of idiots in the State to 2,302. Similar corrections in other counties would raise it still more.

The most cursory inspection of Table No. II., makes it apparent that nearly or quite one-half of the idiots below the age of eleven are unreported, being either unknown to the physicians, or not yet recognized as idiots.

Assuming the number 652 between the ages of eleven and twenty, inclusive, to be correct, and supposing it to constitute twenty-two and a half per cent. of the total number, as the census would indicate it to be in fact, the actual number of idiots in Illinois is 2,900, or 1 : 867 of the entire population, which is a larger proportion even than that of the insane.

It is safe to say that the proportion of idiots in Illinois (and probably in other communities,) is at least as large as that of the insane.

In Table No. III., nearly all of those stated as born in the Northwestern States, are natives of Indiana.

In Table No. IV., by "dependent," are meant not only those who are a county charge, but those who are properly objects of charity, public or private.

Of 1,351 idiots whose pecuniary circumstances are stated, there were :

Dependent	692
Independent	659

Of the 659 independent idiots, 78 are reported to be wealthy.

Thus it appears that idiocy is a cause of poverty, but wealth and social station do not exempt their possessors from the liability to idiotic offspring.

TABLE I.

Showing amount of correspondence with Physicians, on Insanity and Idiocy, and number of replies received, in the State of Illinois, by counties.

Counties.	Total No. of Physicians.	Replied	Removed ...	Deceased ...	Not practicing......	No reply...
Adams	115	38	6	2	3	66
Alexander	15	1	......	......	......	14
Bond	29	11	5	......	......	13
Boone	20	5	......	......	......	15
Brown	28	6	1	......	......	21
Bureau	29	14	......	......	1	14
Calhoun	14	7	......	......	......	7
Carroll	39	13	3	......	......	23
Cass	23	12	......	1	2	8
Champaign	51	13	......	......	......	38
Christian	43	14	......	......	......	29
Clark	34	14	1	1	3	15
Clay	39	20	......	......	......	19
Clinton	29	17	......	......	......	12
Coles	81	34	18	1	6	22
Cook	608	162	1	......	3	442
Crawford	35	12	......	......	......	23
Cumberland	27	12	3	......	2	10
DeKalb	52	12	2	2	1	35
DeWitt	39	10	......	......	......	29
Douglas	36	12	......	1	......	23
DuPage	31	20	......	......	2	9
Edgar	39	13	......	......	1	25
Edwards	10	4	......	......	......	6
Effingham	40	24	......	......	1	15
Fayette	31	13	6	......	......	12
Ford	11	4	......	......	......	7
Franklin	27	14	......	......	......	13
Fulton	68	28	4	......	4	32
Gallatin	22	7	......	......	......	15
Greene	42	17	4	......	1	20
Grundy	26	9	8	1	1	7
Hamilton	19	6	......	......	......	13
Hancock	69	33	2	......	1	33
Hardin	9	3	......	......	......	6
Henderson	12	4	......	......	......	8
Henry	33	13	......	1	......	19
Iroquois	50	13	1	......	1	35
Jackson	30	13	1	....	......	16
Jasper	26	9	......	......	......	17
Jefferson	52	12	......	......	......	40
Jersey	29	10	1	......	......	18
JoDaviess	48	18	8	1	2	19
Johnson	17	4	3	......	......	10
Kane	87	23	......	......	......	64
Kankakee	38	16	1	......	......	21
Kendall	22	12	2	......	2	6
Knox	70	24	5	......	10	31
Lake	22	10	......	......	......	12
LaSalle	127	44	4	......	4	75
Lawrence	31	15	......	......	......	16
Lee	46	27	3	......	......	16
Livingston	27	11	......	......	......	16
Logan	42	14	1	......	......	27

TABLE I.—Continued.

Counties.	Total No. of Physicians.	Replied....	Removed...	Deceased...	Not practicing.....	No reply....
Macon	47	16	1	......	1	2
Macoupin	68	25	......	......	8	4
Madison	68	30	......	......	......	3
Marion	82	29	......	......	......	5
Marshall	24	9	......	......	......	1
Mason	35	6	3	......	......	2
Massac	18	3	1	......	......	1
McDonough	63	17	......	......	......	4
McHenry	38	16	6	......	......	1
McLean	116	48	7	1	......	6
Menard	27	8	......	......	......	1
Mercer	33	21	1	......	......	1
Monroe	28	9	1	......	......	1
Montgomery	61	25	2	......	......	3
Morgan	72	18	2	......	......	5
Moultrie	16	2	......	......	......	1
Ogle	71	18	10	......	1	4
Peoria	67	22	......	......	1	4
Perry	26	3	......	......	......	2
Piatt	14	4	......	......	......	1
Pike	66	31	......	......	......	3
Pope	15	7	......	......	......	
Pulaski	18	9	......	......	......	
Putnam	6	2	......	......	......	
Randolph	46	29	......	......	......	1
Richland	49	20	7	2	......	2
Rock Island	40	23	7	1	......	
Saline	24	7	......	......	......	1
Sangamon	88	37	13	1	......	8
Schuyler	22	7	......	......	......	1
Scott	23	6	2	......	......	1
Shelby	53	27	4	2	4	1
Stark	24	11	......	......	......	3
St. Clair	72	31	......	......	1	4
Stephenson	73	20	......	2	5	4
Tazewell	48	20	2	......	......	2
Union	32	10	......	......	......	2
Vermilion	60	11	1	......	......	4
Wabash	8	4	1	......	......	
Warren	44	17	15	......	1	1
Washington	45	25	......	......	......	2
Wayne	28	15	......	......	......	1
White	32	16	2	......	......	1
Whiteside	52	15	7	2	2	2
Will	74	33	4	4	2	3
Williamson	28	6	......	......	......	2
Winnebago	58	19	4	......	2	3
Woodford	37	20	......	......	......	1
Aggregate	4773	1728	192	26	74	275

TABLE II.

Showing the number, sex, color and civil condition of 1738 *Idiots, in the State of Illinois, by counties.*

Counties.	Total	Male	Female	Not stated	White	Colored	Not stated	Married	Single	Not stated
Adams	26	18	8	....	26	....	....	....	14	12
Alexander	1	1	......	....	1	....	....	....	1	....
Bond	16	8	8	....	16	....	....	....	13	3
Boone	14	7	7	....	14	....	....	....	5	9
Brown	17	7	10	....	17	....	....	....	15	2
Bureau	20	12	8	....	20	....	....	....	11	9
Calhoun	6	3	3	....	6	....	....	....	6	....
Carroll	13	10	3	....	12	1	....	....	8	5
Cass	19	17	2	....	18	1	....	....	17	2
Champaign	25	13	12	....	25	....	....	....	16	9
Christian	13	9	4	....	13	....	....	....	10	3
Clark	23	13	10	....	23	....	....	1	8	14
Clay	15	8	7	....	15	....	....	....	8	7
Clinton	20	11	9	....	17	3	....	....	5	15
Coles	24	14	10	....	24	....	....	1	16	7
Cook	50	28	22	....	49	1	....	....	39	10
Crawford	14	9	5	....	14	....	....	3	5	6
Cumberland	15	8	7	....	15	....	....	....	15	....
DeKalb	28	19	9	....	28	....	....	....	12	16
DeWitt	9	5	4	....	9	....	....	....	1	8
Douglas	9	7	2	....	9	....	....	....	7	2
DuPage	16	7	9	....	16	....	....	....	9	7
Edgar	23	18	5	....	23	....	....	....	9	14
Edwards	10	9	1	....	10	....	....	....	6	4
Effingham	14	5	9	....	14	....	....	1	7	6
Fayette	15	5	10	....	15	....	....	....	5	10
Ford	1	1	......	....	1	....	....	....	1	....
Franklin	8	2	6	....	8	....	....	1	7	....
Fulton	36	19	17	....	36	....	....	1	18	17
Gallatin	19	12	7	....	18	1	....	1	10	8
Greene	17	11	6	....	17	....	....	1	12	4
Grundy	13	9	4	....	13	....	....	....	1	12
Hamilton	9	3	6	....	9	....	....	....	4	5
Hancock	32	20	12	....	32	....	....	....	6	26
Hardin	3	2	1	....	2	....	1	....	3	....
Henderson	4	2	2	....	4	....	....	....	2	2
Henry	11	5	6	....	10	....	1	....	6	5
Iroquois	10	5	5	....	10	....	....	1	5	4
Jackson	13	6	7	....	13	....	....	....	6	7
Jasper	24	16	8	....	24	....	....	....	7	17
Jefferson	11	7	4	....	11	....	....	....	....	11
Jersey	8	6	2	....	8	....	....	1	4	3
Jo Daviess	19	17	2	....	19	....	....	....	10	9
Johnson	15	9	5	1	13	....	2	3	12	....
Kane	26	17	8	1	26	....	....	....	21	5
Kankakee	6	1	5	....	6	....	....	....	6	....
Kendall	8	8	......	....	8	....	....	....	2	6
Knox	33	21	12	....	31	2	....	....	25	8
Lake	16	10	6	....	16	....	....	....	6	10
LaSalle	44	24	20	....	44	....	....	....	18	26
Lawrence	18	12	6	....	18	....	....	....	9	9
Lee	21	13	8	....	21	....	....	....	6	15
Livingston	11	7	4	....	11	....	....	....	8	3
Logan	12	7	5	....	12	....	....	....	4	8

TABLE II.—Continued.

Counties.	Total	Male	Female	Not stated	White	Colored	Not stated	Married	Single	Not stated
Macon	19	14	5	....	19	....	....	....	15	4
Macoupin	43	24	19	....	43	....	....	....	29	14
Madison	41	23	18	....	40	1	....	....	10	31
Marion	20	11	9	....	20	....	....	....	8	12
Marshall	14	8	6	....	14	....	....	....	10	4
Mason	5	3	2	....	5	....	....	....	4	1
Massac	2	2	......	....	2	.. .	....	....	....	2
McDonough	35	23	12	....	35	....	....	....	29	6
McHenry	26	16	10	....	26	....	....	....	22	4
McLean	26	14	12	....	26	....	....	1	11	14
Menard	5	4	1	....	5	....	....	....	4	1
Mercer	27	17	10	....	27	....	....	1	9	17
Monroe	5	3	2	....	5	....	....	....	2	3
Montgomery	16	9	7	....	16	....	....	....	12	4
Morgan	50	24	26	....	49	1	....	....	38	12
Moultrie	3	2	1	..	3	....	....	....	....	3
Ogle	20	8	12	....	20	....	....	...	15	5
Peoria	29	20	9	....	29	....	....	....	17	12
Perry	12	7	5	....	12	....	....	....	3	9
Piatt	5	2	3	....	3	2	....	....	2	3
Pike	32	19	13	....	31	1	....	....	26	6
Pope	9	7	2	....	9	....	....	....	5	4
Pulaski	7	4	3	....	7	....	....	....	7	....
Putnam	1	1	......	....	1	....	....	....	....	1
Randolph	21	11	10	....	21	....	....	....	9	12
Richland	20	15	5	....	20	....	....	....	13	7
Rock Island	19	11	8	....	19	....	....	....	3	16
Saline	9	7	2	....	9	....	....	....	4	5
Sangamon	22	14	8	....	22	....	....	....	10	12
Schuyler	21	13	8	....	21	....	....	....	10	11
Scott	8	7	1	....	8	....	....	....	8	....
Shelby	28	20	8	....	28	....	....	3	22	3
Stark	10	5	5	....	10	....	....	1	7	2
St. Clair	25	13	12	....	25	....	....	1	3	21
Stephenson	25	19	6	....	25	...	....	....	16	9
Tazewell	8	4	4	....	8	...	....	....	5	3
Union	7	2	5	....	7	....	....	....	....	7
Vermilion	6	3	3	....	6	....	....	....	6	....
Wabash	10	6	4	....	10	....	....	....	9	1
Warren	17	13	4	....	17	....	....	....	1	16
Washington	23	18	5	....	23	....	....	1	7	15
Wayne	11	9	2	....	11	....	....	1	1	9
White	19	14	5	....	19	....	...	1	7	11
Whiteside	27	11	16	....	27	....	...	....	17	10
Will	23	19	4	....	23	....	....	1	8	14
Williamson	10	8	2	....	10	....	....	1	2	7
Winnebago	5	3	2	....	5	..	....	....	5	....
Woodford	9	8	1	....	9	....	....	....	1	8
Aggregate	1738	1061	675	2	1720	14	4	27	939	772

TABLE III.

Showing the ages of 1788 *Idiots, in the State of Illinois, by counties.*

Counties.	5 and under.	6 to 10....	11 to 20....	21 to 30....	31 to 40....	41 to 50....	51 to 60....	61 to 70....	Over 70....	Not stated..
Adams	2	1	8	11	2	2	....	....	....	....
Alexander	....	....	1	....	....	...	....	....	....	....
Bond	....	....	2	7	2	....	....	....	....	5
Boone	....	....	4	3	3	1	....	..	....	3
Brown	2	1	2	6	3	1	....	..	....	2
Bureau	....	6	3	4	2	3	2	....	....	....
Calhoun	....	....	3	2	1	....	....	....	.. ..	....
Carroll	....	....	4	5	....	....	2	....	....	2
Cass	1	3	6	3	4	....	2	....	....	....
Champaign	1	4	11	4	5	....	. ..	....	....	....
Christian	....	1	8	2	....	....	....	....	....	2
Clark	1	1	12	5	2	2	....	....	....	....
Clay	....	2	5	3	2	1	....	....	....	2
Clinton	1	4	7	5	2	1	....	....	....	....
Coles	....	1	4	8	1	3	2	....	....	5
Cook	1	8	30	7	1	....	....	....	....	3
Crawford	1	2	2	5	2	1	....	1	....	....
Cumberland	....	4	4	4	2	....	....	1	....	....
DeKalb	1	2	8	8	6	2	....	....	....	1
DeWitt	2	1	1	4	1	....	....	....	....	....
Douglas	2	....	5	1	....	1	....	....	....	....
DuPage	....	....	3	6	3	3	1	....	....	....
Edgar	....	2	7	7	5	2	....	....	....	....
Edwards	....	....	1	3	6	....	....	....	....	....
Effingham	2	....	6	4	....	2	...	....	....	....
Fayette	1	1	5	6	1	1	....	....	....	....
Ford	1	....	....	...	...	....	....	....	....	....
Franklin	....	....	2	2	3	1	...	....	....	....
Fulton	1	6	14	9	4	....	1	....	....	1
Gallatin	1	2	9	4	1	1	....	....	....	1
Greene	....	....	10	3	1	1	1	1	....	....
Grundy	....	1	7	4	...	....	....	....	....	1
Hamilton	....	....	2	3	1	....	....	....	....	3
Hancock	2	3	11	6	6	....	....	....	...	4
Hardin	....	...	1	2	....	....	....	....	....	....
Henderson	....	1	2	1	....	....	....	....	....	....
Henry	1	....	6	3	1	....	....	...	...	....
Iroquois	1	1	5	3	....	....	.	....	....	....
Jackson	2	3	6	1	1	....	....	....	....	....
Jasper	....	....	8	10	4	1	1	....	....	....
Jefferson	....	1	3	4	....	....	2	1	....	....
Jersey	....	3	1	....	2	1	....	....	....	1
Jo Daviess	...	1	9	6	1	1	1	....	....	....
Johnson	1	....	2	8	....	4	....	....	....	....
Kane	2	6	8	6	1	1	2	....	....	....
Kankakee	....	2	2	2	....		....	....	....	....
Kendall	....	3	2	2	1	....	....	....	....	....
Knox	....	3	12	6	2	2	2	1	....	5
Lake	2	2	4	4	1	....	....	1	....	2
LaSalle	3	11	21	5	3	....	1	....	....	....
Lawrence	....	3	6	6	1	2	....	....	....	....
Lee	1	2	6	9	1	....	....	....	....	2
Livingston	....	1	2	4	2	....	...	....	....	2
Logan	....	2	4	3	1	....	....	....	....	2

TABLE III.—Continued.

Counties.	5 and under.	6 to 10....	11 to 20....	21 to 30....	31 to 40....	41 to 50....	51 to 60....	61 to 70....	Over 70....	Not stated..
Macon	1	2	7	2	4	...	....	1	1	1
Macoupin	2	5	11	17	1	5	....	....	....	2
Madison	1	1	7	13	14	3	....	...	....	2
Marion	....	1	8	5	2	1	....	....	....	3
Marshall	....	2	5	7	....	....	....	....	....	....
Mason	....	....	4	1	....	....	...	....	....	....
Massac	1	....	1	...	....	....	...	....	....	....
McDonough	....	2	13	12	3	1	....	1	....	3
McHenry	1	2	6	4	5	1	3	....	....	4
McLean	1	2	8	4	4	3	....	....	....	4
Menard	....	....	4	1	....	....	....	....	....	....
Mercer	....	2	6	12	4	....	1	2	....	....
Monroe	....		2	....	....	....	....	....	....	3
Montgomery	1	3	4	4	1	1	....	....	....	2
Morgan	1	5	24	6	1	....	1	...	....	12
Moultrie	...	1	....	....	....	...	....	....	....	2
Ogle	...	5	2	7	4	...	....	....	....	2
Peoria	..	5	18	6	2	2	...	...	....	1
Perry	..	...	2	4	3	....	..	...	....	3
Piatt	1	....	3	1	....	....	...	....	....	....
Pike	1	2	12	10	3	3	1	....	....	....
Pope	....	1	2	4	2	....	....	..	....	....
Pulaski	....	3	4	....	....	....	....	....	....	....
Putnam	....	..	....	1	....	....	....	....	....	....
Randolph	1	4	3	9	4	....	....	....	....	...
Richland	2	3	7	5	2	....	....	....	....	1
Rock Island	1	2	7	5	4	...	....	....	....	....
Saline	....	1	5	2	1	....	....	....	....	....
Sangamon	...	1	15	3	....	2	...	....	....	1
Schuyler	....	1	3	7	4	1	....	3	...	2
Scott	....	2	1	5	....	....	....	....	....	....
Shelby	...	1	18	9	4	....	....	....	1	...
Stark	1	3	1	2	2	1	....	....	....	...
St. Clair	3	3	11	6	1	1	....	....	....	...
Stephenson	...	1	12	7	3	2	....	....	....	...
Tazewell	....	3	4	....	1	....	....	...	....	...
Union	1	1	4	1	....	....	....	....	....	...
Vermilion	...	1	3	....	....	1	....	....	...	
Wabash	....	....	3	3	3	1	....	....	....	..
Warren	....	2	4	7	....	2	....	....	....	
Washington	1	....	6	7	1	5	2	1	...	...
Wayne	....	....	3	4	1	2	1	....	....	..
White	..	1	6	8	....	1	1	....	....	
Whiteside	....	1	18	5	3	....	....	....	....	..
Will	....	2	14	4	1	2	....	....	....	.
Williamson	1	1	1	6	....	1	....	....	....	..
Winnebago	...	....	1	4	....	....	....	..	....	..
Woodford	....	2	3	3	1	....	....	....	....	..
Aggregate	58	81	613	472	183	83	30	14	2	

TABLE IV.

Showing the nativity of 1788 Idiots, in the State of Illinois, by counties.

Counties.	Illinois.	N. England..	N. York and N. Jersey..	Pennsylvania and Ohio...	N. W. States.	Missouri and Arkansas ..	Kentucky and Tennessee..	Other Southern States..	Foreign. ...	Not stated...
Adams	15	....	1	1	....	1	....	....	....	8
Alexander	....	....	....	....	....	....	....	....	....	1
Bond	13	....	....	....	....	....	....	....	..	8
Boone	2	1	....	....	1	....	....	....	4	6
Brown	9	....	....	1	....	....	....	....	....	7
Bureau	8	1	1	4	....	....	....	....	1	5
Calhoun	4	....	....	....	....	....	....	...	2	....
Carroll	1	....	2	1	....	....	....	....	....	9
Cass	11	....	....	....	...	....	2	....	2	4
Champaign	10	...	1	4	8	...	....	1	....	6
Christian	11	....	....	....	....	....	1	....	....	1
Clark	16	....	1	1	....	....	...	4	1	...
Clay	7	....	....	1	8	....	....	1	1	2
Clinton	14	....	....	....	....	1	1	1	8	....
Coles	15	....	....	1	....	2	1	....	2	8
Cook	12	....	...	....	1	....	1	....	1	35
Crawford	9	....	....	2	8	....	....	....	....	....
Cumberland	8	....	...	1	4	....	....	2	...	....
DeKalb	5	....	8	2	....	....	....	1	....	17
DeWitt	8	....	....	8	....	....	1	....	....	2
Douglas	6	....	....	8	....	....	....	....	....	....
DuPage	6	2	8	8	....	....	....	....	1	1
Edgar	16	....	....	2	1	...	2	....	....	2
Edwards	7	....	....	...	2	....	....	....	1	....
Effingham	6	....	....	8	....	....	1	....	2	2
Fayette	12	....	....	....	....	1	1	1	....	...
Ford	1	....	....	....	....	....	....	....	....	....
Franklin	6	....	...	....	....	....	2	....	....	....
Fulton	15	....	4	7	1	2	1	...	....	6
Gallatin	15	....	....	....	....	....	8	1	....	....
Greene	11	....	...	....	....	....	1	....	....	5
Grundy	5	....	1	...	2	....	....	....	8	2
Hamilton	4	....	....	....	....	....	2	....	....	8
Hancock	18	....	1	....	8	1	....	1	2	6
Hardin	1	....	....	....	....	....	1	....	....	1
Henderson	8	...	....	1	....	....	....	....	....	....
Henry	1	....	2	1	....	....	....	....	8	4
Iroquois	4	1	1	....	2	....	....	....	1	1
Jackson	6	....	....	...	1	1	1	....	....	4
Jasper	10	....	....	1	8	....	1	....	2	2
Jefferson	8	....	....	....	....	1	1	....	....	1
Jersey	5	....	....	....	....	....	....	1	1	1
JoDaviess	6	1	....	2	....	....	....	....	4	6
Johnson	8	....	...	1	....	....	8	8	....	....
Kane	11	1	8	....	....	....	....	....	8	8
Kankakee	1	....	....	....	....	....	....	....	1	4
Kendall	4	8	....	....	....	....	....	....	....	1
Knox	10	1	2	6	....	2	1	....	2	9
Lake	9	....	....	....	....	....	....	....	....	7
LaSalle	26	2	1	1	....	....	....	....	....	14
Lawrence	14	2	....	1	....	....	1	....	....	....
Lee	13	....	1	....	....	....	....	....	6	1
Livingston	6	....	....	1	....	....	....	....	...	4
Logan	8	....	....	8	1	....	1	1	....	8

TABLE IV.—Continued.

Counties.	Illinois....	N. England.	N. York and N. Jersey...	Pennsylvania and Ohio..	N. W. States.	Missouri and Arkansas..	Kentucky and Tennessee..	Other Southern States.	Foreign....	Not stated..
Macoon	10	....	....	2	....	....	....	....	...	7
Macoupin	22	. ..	1	....	....	2	4	4	3	7
Madison	17	....	....	....	....	....	1	1	13	9
Marion	13	....	....	....	2	....	1	....	....	4
Marshall	7	...	....	3	....	....	....	....	....	4
Mason	1	....	...	..	1	....	....	....	....	3
Massac	2	....	....	....	....	....	....	....	....	....
McDonough	13	....	1	5	....	....	6	3	...	7
McHenry	11	...	7	2	....	...	....	....	....	6
McLean	6	....	....	5	1	....	...	....	2	12
Menard	1	....	1	....	...	....	....	....	....	3
Mercer	12	....	1	2	1	....	....	....	2	9
Monroe	3	....	....	....	...	...	....	....	....	2
Montgomery	6	....	....	....	1	2	1	....	....	6
Morgan	17	....	....	1	....	1	1	1	2	27
Moultrie	1	....	....	....	...	....	....	....	....	2
Ogle	9	....	....	4	....	1	....	1	1	4
Peoria	7	....	2	2	1	....	....	1	3	13
Perry	6	....	....	....	....	....	....	....	1	5
Piatt	2	....	....	....	....	....	....	....	....	3
Pike	24	....	....	2	....	....	....	....	1	5
Pope	5	....	....	....	....	....	2	....	....	2
Pulaski	2	....	....	....	....	1	2	....	....	2
Putnam	......	....	....	....	....	....	....	...	1	....
Randolph	18	....	....	..	....	1	....	....	1	1
Richland	11	....	....	3	1	....	....	1	1	3
Rock Island	5	....	1	1	3	....	....	....	3	6
Saline	6	....	....	....	1	....	....	1	....	1
Sangamon	11	....	....	1	2	....	....	....	.	8
Schuyler	10	....	....	1	2	1	....	2	3	2
Scott	3	...	....	....	....	...	....	....	....	5
Shelby	23	....	....	3	1	...	1	....	....	....
Stark	5	....	...	4	....	....	....	....	....	1
St. Clair	17	....	....	....	....	1	....	....	3	4
Stephenson	3	....	....	9	....	....	....	....	6	7
Tazewell	3	1	1	....	....	....	...	..	....	3
Union	6	....	....	....	....	....	....	1	...	....
Vermilion	3	....	....	....	....	....	....	....	....	3
Wabash	8	...	....	....	1	....	1	....	....	.. .
Warren	8	....	....	2	1	....	....	....	....	6
Washington	15	....	....	1	....	....	8	....	1	3
Wayne	4	....	....	2	....	....	1	....	....	4
White	11	....	....	2	1	....	1	....	....	4
Whiteside	17	1	1	3	....	...	....	....	....	5
Will	10	....	2	1	....	....	....	....	4	6
Williamson	9	....	....	....	....	....	....	1	....	....
Winnebago	1	....	....	....	....	....	....	....	....	4
Woodford	5	1	....	1	....	....	....	....	1	1
Aggregate	854	18	46	120	56	22	60	35	101	426

TABLE V.

Showing the condition and situation of 1788 *Idiots, in the State of Illinois, by counties.*

Counties.	Dependent..	Independent.	Not stated..	Poor house..	Jail.... ...	Asylum....	At home...	At large....	Not stated..
Adams	10	11	5	....	....	4	8	....	14
Alexander	1	......	....	....	....	....	1	....	....
Bond	8	6	2	....	1	1	12	1	1
Boone	2	......	12	....	....	3	2	....	9
Brown	13	2	2	12	....	2	3	....	...
Bureau	13	5	2	7	....	4	1	....	8
Calhoun	4	2	...	2	....	...	3	....	1
Carroll	2	2	9	3	....	5	4	....	1
Cass	5	10	4	4	....	3	12	....	....
Champaign	6	13	6	5	...	5	12	...	8
Christian	4	7	2	....	....	1	11	....	....
Clark	14	6	3	5	....	....	1	5	12
Clay	8	4	3	....	...	1	6	....	8
Clinton	10	10	....	....	....	....	5	....	15
Coles	6	8	10	4	....	1	14	....	5
Cook	2	14	34	....	....	33	9	....	8
Crawford	12	2	....	8	....	....	6	....	....
Cumberland	12	3	....	1	....	...	12	....	2
DeKalb	9	18	1	4	....	....	7	....	17
DeWitt	4	3	2	....	....	....	2	....	7
Douglas	3	6	....	....	....	....	7	....	2
DuPage	8	8	....	....	...	....	13	....	3
Edgar	8	14	1	2	....	1	11	....	9
Edwards	1	9	...	....	....	...	6	....	5
Effingham	7	6	1	....	...	....	8	....	6
Fayette	9	6	...	2	....	....	5	....	8
Ford	......	1	....	...	....	....	1	....	....
Franklin	5	3	....	2	....	....	6	...	....
Fulton	14	18	4	4	....	8	17	....	12
Gallatin	7	8	4	1	....	2	14	...	2
Greene	8	6	3	1	....	1	8	....	7
Grundy	6	3	4	1	....	1	3	...	8
Hamilton	3	8	3	....	....	....	4	....	5
Hancock	22	4	6	....	....	4	3	...	25
Hardin	......	1	2	....	....	1	2	....	....
Henderson	2	2	....	....	....	....	1	1	2
Henry	6	1	4	1	....	4	3	....	3
Iroquois	7	1	2	....	....	1	6	....	3
Jackson	4	5	4	2	....	4	4	....	3
Jasper	14	10	....	....	....	6	......	....	18
Jefferson	7	4	...	...	...	..	4	....	7
Jersey	1	5	2	....	....	1	6	....	1
JoDaviess	9	7	3	2	....	8	6	....	9
Johnson	2	10	3	1	....	....	14	....	....
Kane	5	9	12	2	....	6	15	....	3
Kankakee	......	2	4	....	...	4	2	....	....
Kendall	4	4	....	....	....	....	5	....	3
Knox	17	7	9	18	....	6	6	...	8
Lake	2	2	12	9	....	3	1	....	3
LaSalle	12	21	11	8	....	5	14	....	22
Lawrence	6	9	3	...	....	1	8	....	9
Lee	12	5	4	2	....	....	4	....	15
Livingston	2	5	4	...	....	1	4	....	6
Logan	8	2	2	1	....	...	2	....	9

TABLE V.—Continued.

Counties.	Dependent..	Independent.	Not stated..	Poor house..	Jail.......	Asylum	At home...	At large....	Not stated..
Macon	6	4	9	1	....	4	7	....	7
Macoupin	18	21	4	7	....	1	20	....	1
Madison	29	10	2	16	....	1	16	...	8
Marion	9	9	2	....	....	....	6	....	14
Marshall	7	5	2	...	...	1	6	....	7
Mason	2	......	3	....	....	2	2	....	1
Massac	2	.....	....	....	....	....	2	....	...
McDonough	6	16	18	....	....	8	19	....	1
McHenry	9	12	5	....	...	.	22	...	4
McLean	12	8	11	1	....	8	5	....	1
Menard	1	1	8	....	....	1	8	....	1
Mercer	6	17	4	5	....	1	7	....	1
Monroe	2	......	8	....	....	....	2	....	
Montgomery	7	7	2	....	....	. ..	14	....	
Morgan	11	20	19	12	....	7	19	....	1
Moultrie	8	......	....	1	....	...	2	....	...
Ogle	6	10	4	1	....	1	14	....	4
Peoria	9	7	18	2	....	4	5	....	1
Perry	5	4	3	....	....	....	2	....	1
Piatt	2	......	8	....	....	1	2	....	
Pike	15	14	8	5	....	....	28	....	4
Pope	4	8	2	....	....	....	4	....	
Pulaski	4	1	2	....	....	....	4	....	
Putnam	1	......	....	....	....	....	......	...	1
Randolph	9	12	....	1	....	....	14	...	
Richland	4	18	8	....	....	2	12	....	
Rock Island	7	5	7	8	....	....	5	....	1
Saline	8	6	....	....	...	...	6	....	
Sangamon	6	8	8	8	...	5	2	....	1
Schuyler	12	5	4	8	....	1	8	....	
Scott	8	......	5	1	....	2	2	....	
Shelby	10	16	2	....	....	....	27	....	
Stark	8	7	....	....	....	....	8	....	
St. Clair	7	14	4	....	....	1	4	....	2
Stephenson	8	17	5	2	....	1	17	....	
Tazewell	1	8	4	....	....	1	8	....	
Union	1	6	....	....	....	....	......	....	
Vermilion	8	1	2	....	....	....	5	....	
Wabash	4	5	1	....	....	....	5	....	
Warren	14	1	2	....	....	....	......	....	1
Washington	11	11	1	1	....	....	9	...	1
Wayne	8	2	1	....	....	....	4	....	
White	14	4	1	1	....	....	9	....	
Whiteside	9	12	6	4	...	1	18	....	
Will	7	6	10	2	...	2	6	....	1
Williamson	5	4	1	....	....	1	9	...	...
Winnebago	1	......	4	....	....	1	1	....	
Woodford	5	4	....	1	....	....	8	....	
Aggregate	608	658	887	162	2	169	727	7	63

TABLE VI.

Showing the supposed causes of Idiocy, as far as ascertained, in 1738 cases, in the State of Illinois, by counties.

Counties.	Hereditary..	Consanguineous marriage	Parental intemperance.	Intra-uterine.	Sickness...	Epilepsy....	Convulsions.	Paralysis...	Scrofula....	Malformat'n.	Accident....	Not stated..
Adams					2							24
Alexander												1
Bond						1						13
Boone						1			1			12
Brown											1	15
Bureau						1						19
Calhoun	1											5
Carroll							1					12
Cass			1		1	1						16
Champaign						2			2			27
Christian	1	1			1							10
Clark	1	3			1	1						17
Clay				1		1					1	12
Clinton		1				1		3				15
Coles	1				1	3						19
Cook				1	2	1						45
Crawford	1										1	13
Cumberland	1					3	1					10
DeKalb					1		1					26
DeWitt							1					3
Douglas	2				3							4
DuPage						2	1					13
Edgar	1				2	1					1	16
Edwards												10
Effingham	1	1				1						11
Fayette							2					13
Ford					1							
Franklin												3
Fulton	1				3		2				1	29
Gallatin	3					6	1					4
Greene		1										16
Grundy	3				2	1						7
Hamilton												9
Hancock	3			1	3	4						21
Hardin												3
Henderson					1					2		1
Henry	1						1					9
Iroquois		1			1	3						5
Jackson					1	1						11
Jasper	7				1	1						15
Jefferson					1							10
Jersey					1							7
Jo Daviess						1					1	17
Johnson		1								1		13
Kane	1			2	2						2	19
Kankakee												6
Kendall					3		1				1	3
Knox					1	4					1	27
Lake										1		15
LaSalle		4	1		2	2	2					38
Lawrence	1				1							16
Lee					1	4	1					15
Livingston					1						1	9
Logan					1	3	1		1			6

TABLE VI.—Continued.

Counties.	Hereditary..	Consanguineous marriage	Parental intemperance.	Intra-uterine.	Sickness ...	Epilepsy ...	Convulsions.	Paralysis ...	Scrofula....	Malformat'n.	Accident...	Not stated..
Macon						1						18
Macoupin	1	2			1	4	3					32
Madison	1				2	1						37
Marion	2	3		1		2	1					11
Marshall												14
Mason												5
Massac												2
McDonough	3	5		3		4			1			19
McHenry	4				4		2					16
McLean	3		1		2					1		19
Menard					1							4
Mercer	3	2										22
Monroe												5
Montgomery		3		1	3		1					8
Morgan		2			2	2	1					43
Moultrie										1		2
Ogle		5	2		1		2					10
Peoria				1		3						25
Perry	1					1						10
Piatt				2		1						2
Pike					2	1	1				1	27
Pope											1	8
Pulaski					1							6
Putnam												1
Randolph	1	2		1	2							15
Richland		2				1						17
Rock Island							2					17
Saline	1				1	3				1		3
Sangamon							2				2	18
Schuyler	1	1					1					18
Scott	1		2									5
Shelby					5	1	1				1	20
Stark										2	1	7
St. Clair	2	3				2				1		17
Stephenson	6											19
Tazewell												8
Union												7
Vermilion												6
Wabash												1
Warren				1		1			1			14
Washington												2
Wayne	1				1							
White	6	1				1	1					1
Whiteside												2
Will	1										1	2
Williamson											1	
Winnebago							1					
Woodford	1		1		1					1	1	
Aggregate	74	44	8	15	70	79	35	3	6	11	20	137

CIRCULAR.

The Illinois Institution for the Education of Feeble-Minded Children was organized in 1865, and has since been incorporated as one of the permanent charitable institutions of the State.

The design and object of the Institution are not of a custodial character, but to furnish the means of education to that portion of the youth of the State not provided for in any of its other educational institutions, who are of a proper school-attending age, and who shall remain such periods of time as shall, in the estimation of the Superintendent and Board of Trustees, suffice to impart all the education practicable in each particular case, and in conformity with regulations hereinafter specified.

Children between the ages of ten and eighteen who are idiotic, or so deficient in intelligence as to be incapable of being educated at any ordinary school, and who are not epileptic, insane or greatly deformed, may be admitted by the Superintendent.

The parents or guardians of those in whose behalf applications are made for admission as pupils, will be required to answer, in writing, such questions as the Superintendent may prescribe.

All pupils will be received upon trial, and will be expected to come to the Institution provided with a supply of neat and substantial clothing. A bond will be required, in all cases, with securities, accompanied by a certificate of the county clerk that the sureties are responsible, to insure the removal of the pupil, when required by the Superintendent, free of expense to the Institution, its officers or agents, and the provision of comfortable and suitable clothing or pay for such as may be furnished the pupil during its continuance in the school.

Pauper pupils must have a certificate from the county judge, that the county court or board of supervisors have passed an order that the county from which they are sent will be responsible for clothing, incidental expenses and traveling expenses incurred on account of said pupils; also, guaranteeing that said pupils shall be taken away during the annual vacation each year, without expense to the Institution, or any of its officers or agents.

FORM OF BOND.

Know all men by these presents, That we, ... as principal, and .... as security, are held and firmly bound unto the Board of Trustees of the "Illinois Institution for the Education of Feeble-Minded Children," in the penal sum of .... dollars, for the true payment whereof we bind ourselves, our heirs, executors, administrators or assigns, jointly and severally, firmly by these presents.

Sealed with our seals, and dated this .... day of .... 18..

The conditions of the above obligation are such, that whereas, the said .... has placed in charge of the said obligees ...., an imbecile child, for the purpose of being trained and instructed, as provided for by an act of the General Assembly of the State of Illinois, entitled "An act incorporating the Illinois Institution for the Education of Feeble-Minded Children," approved the 6th of April, 1871, and has agreed to furnish the said child with comfortable and suitable clothing, or pay for such as may be furnished during .. .. continuance in the school, and also to remove the said child from the Institution whenever required, without charge to the Institution or any of its officers or agents.

Now, if the said .... shall well and truly perform the conditions aforesaid, then this obligation to be void: otherwise to remain in full force and effect.

.... [SEAL.]
.... [SEAL.]
.... [SEAL.]

FORM OF CERTIFCATE FOR PAUPER PUPILS.

STATE OF ILLINOIS, } ss.
County of .... }

C. T. WILBUR, M. D., *Sup't*,
Illinois Institution for the Education of Feeble-Minded Children:

SIR: By virtue of an order of the ... . of .... county, passed .... 18.., and in accordance with the provisions of section 11 of "An act incorporating the Illinois Institution for the Education of Feeble-Minded Children," approved April 6th, 1871, I, ... Judge of the County Court of .... county, do hereby certify that .... is a resident of .... county, that he is a pauper, and proper subject for the care of said Institution, under the provisions of section 11 of said law.

Therefore, ... county will be responsible for all necessary clothing, and also all traveling expenses incurred in the transportation of said .... to or from the Institution to said county.

And it is hereby understood and agreed, that said .... shall be returned to said .... county during the annual vacation, each year, or whenever the Superintendent of said Institution shall so order, at the expense of said .... county, unless other arrangements be made, satisfactory to said Superintendent, at expense of said county.

In testimony whereof, I hereunto subscribe my name, and cause the Seal of the County Court to be attached hereto, this .... day of .... 18...

................, Judge of the County Court of .... County.

ATTEST: ...., Clerk of the County Court of .... County.

The education furnished by the Institution will include not only the simpler elements of instruction usually taught in common schools, where that is practicable, but will embrace a course of training in the more practical matters of every-day life, the cultivation of habits of decency, propriety, self-reliance, and the development and enlargement of a capacity for useful occupation.

There will be a vacation during the months of July and August, at which period all pupils must be removed from the Institution by their parents or guardians, if required by the Superintendent.

The combination which this Institution presents, of practical medical experience and proper physical training, with efficient educational resources, will supply, it is hoped, a want which has long been felt by the parents of the children of this unfortunate class in the State.

A large number of applications have already been made for admission. Others designing to apply should do so at once, as the accommodations of the buildings, though good, are limited. The mansion and residence of the late Governor Duncan have been secured, and are in use for the purposes of the Institution.

The location is healthy and accessible, yet retired. The surroundings are all pleasant, and as fully suited to the purposes for which they are used as could be expected in any buildings not constructed with special reference thereto.

The improvement and progress of the pupils have been very encouraging, and parents and friends in almost every instance have expressed satisfaction with what has been accomplished in the short time since the school was organized.

The Institution is open to the inspection of the public at all reasonable hours; and all are not only cordially invited, but are earnestly requested to visit the school.

It is the desire of the Trustees to ascertain accurately the number of this class of children in the State, and persons knowing the residence of feeble-minded children in Illinois, will confer a favor by writing to that effect to the undersigned, as it is desirable that reliable statistics may be gathered in order that proper legislation may be made in behalf of all of this unfortunate class of children in the State.

Application for admission, information, etc., should be directed to

C. T. WILBUR, M. D., *Superintendent,*
Illinois Institution for Feeble-Minded Children,
Jacksonville, Illinois.

MESSAGE FROM THE GOVERNOR,

RETURNING TO THE HOUSE OF REPRESENTATIVES HOUSE BILL No. 703, WITH HIS OBJECTIONS.

STATE OF ILLINOIS,
EXECUTIVE DEPARTMENT, SPRINGFIELD, *March* 19, 1872.

HON. WM. M. SMITH, *Speaker of the House of Representatives:*

I am unable to approve and sign a bill for "An act entitled 'an act to enable cities, villages and incorporated towns to contract for a supply of water for public use, and to levy and collect a tax to pay for water so supplied,' " which originated in the House of Representatives.

I have examined the provisions of the general incorporation law, and also the special acts incorporating many cities and towns in this State, and find that all the towns incorporated under the general law, and also those incorporated under such special laws already passed, possess the power to contract with any incorporated company or individual for a supply of water for public use.

The general authority to provide such means as may be deemed necessary "to protect such towns from fire," and other general and special provisions found in the incorporation law and in the charters of the cities of Springfield and Quincy, that are made general by the 25th section of that law, are ample to accomplish all the objects apparent upon the face of the first section of the bill, except, perhaps, that of warranting a contract to continue for thirty years.

If I am correct in this statement of the powers already possessed by the cities, towns and villages in the State under existing laws, I am led to apprehend that the peculiar language employed in the second and third sections of the bill is so general and ambiguous as to justify the apprehension that it may be employed for mischievous and dangerous purposes.

By the second section of the bill, it is proposed to authorize any city, incorporated town or village, contracting with any company for a supply of water for public use, to levy and collect a tax on all taxable property within such city, town or village, to pay for the water so supplied; and if the power to contract for a supply of water for public use already exists, in all the cities, towns and villages in the State, as I believe it does, the resulting power to raise money by taxation to pay for water supplied under any such contract follows of necessity, and the provisions substantially quoted from the second section of the bill would be as unnecessary as those found in the first section.

But I cannot avoid the expression of an apprehension that the first and second sections of the bill to the extent quoted, will be found in practice to be merely introductory to the remaining portions of the second section, and all of the third. The remaining words of the second section authorizes taxes to be levied to pay for water supplied by a private company "in the same manner and to the same extent, as where said water works are or shall be owned and operated by such city, incorporated town or village," and such words are unforfunate unless the object intended by their employment is to authorize taxation upon the property of the inhabitants of cities, towns and villages to raise money to be advanced to, and used by private companies in the construction of water works to be operated for their own profit and advantage. And it seems to me that the third section of the bill justifies the apprehension already expressed, that vague and ambiguous language may be employed for mischievous purposes.

Surely, if nothing more is wanted than that cities, towns and villages shall have the power to contract with private companies for a supply of water for public use, and to raise money by taxation to pay for water supplied, even those who doubt the sufficiency of existing laws to secure these objects would prefer that the powers required should be created and conferred in language so simple, clear and precise as to render abuses impossible.

I am satisfied also, that this bill, like others that have passed both branches of the General Assembly, and received the approval of the Governor, are in their spirit violative of the constitutional prohibition of special legislation.

It was no doubt the intention of the framers of the constitution that the General Assembly should enact a comprehensive and general law that would, by the application of judicious methods of classification, provide for the incorporation of cities and towns, and by means of which the people interested would be enabled to settle for themselves all questions like that involved in this bill. If that course had met the favor of the General Assembly, piece-meal legislation like this, suggested probably by some private interest, special in its immediate object, though expressed in terms that are general, would have been avoided.

If, however, this bill was simple and clear in its terms, and could only be construed to authorize cities, towns and villages to contract for a supply of water, and pay for the water supplied by appropriations from the city treasury, I would concur in its passage, but the conviction that it means much more, makes it my duty to withhold from it my approval.

JOHN M. PALMER.

REPORT OF THE SENATE JUDICIARY COMMITTEE

CONCERNING THE

POWER OF THE STATE TO LEVY AND COLLECT TOLLS UPON THE IMPROVEMENTS OF THE NAVIGATION OF THE ILLINOIS AND LITTLE WABASH RIVERS.

To the Honorable the Senate of the State of Illinois:

Your Committee on the Judiciary, to whom was referred a resolution asserting the power of the State to levy and collect tolls upon boats and crafts passing through and using the locks and improvements of the navigation of the Illinois and Little Wabash rivers, have had the same under consideration, and respectfully report their opinion thereon as follows:

As a general proposition, it seems to be settled that the States have the same power to improve navigable waters situated within their respective boundaries, which they possess over other highways; and that where money has been expended in making such improvement it is competent for the State to impose tolls on the commerce which passes through and has the benefit of the improvement, even where the river improved by the State is one over which the regulations of commerce imposed by the Federal Government, extend. (Cooley on Constitutional Limitations, 592; Kellogg vs. The Union Company, 12 Conn. Rep. 7; Thames Bank vs. Lovell, 18 Conn. Rep. 500.)

But the opinion has been advanced that this power cannot be exercised in States which were carved out of the Northwestern Territory, in consequence of Article 4, of the Ordinance of 1787, which provides that:

"The navigable waters leading to the Mississippi and St. Lawrence and the carrying places between the same shall be common highways and forever free, as well to the inhabitants of the said territory as to the citizens of the United States, and those of any other State that may be admitted into the confederacy, without any tax, impost or duty therefor."

In the case of Strader vs. Graham, 10 How. 82, the Chief Justice, and it would seem a majority of the Supreme Court of the United States, held that this ordinance was abrogated by the subsequent adoption of the Constitution of the United States and the constitutions of the several States formed out of that Territory, except so far as its principles may have been embodied in those constitutions. See also Pollard's Lessee vs. Hagan, 3 How. 212, 230.

Upon this question Justice Catron declined to express an opinion, and Justice McLean dissented, holding that the Ordinance of 1787 is still in force and is not thus rescinded.

In view of his position upon this question, the opinion of this great judge which we shall presently cite, is entitled to the highest consideration.

The case of Spooner vs. McConnell et al., 1 McLean's Rep. 337, was a bill filed in the Circuit Court of the United States for the District of Ohio, to enjoin the defendants, who were Canal Commissioners of the State of Ohio, from erecting a dam across the Maumee, a navigable river within that State, to supply the Wabash and Erie Canal with water; and the question was distinctlv presented whether the exercise of such power on the part of the State was prohibited by Article 4 of the Ordinance of 1787, cited above.

The question was maturely considered and elaborate opinions were delivered by both of the learned Judges of that Court. In the opinion of Judge McLean it is held that:

"The provisions of the Ordinance had reference to the navigable rivers, and the carrying places as they then were. And in that State they were to remain free, without tax, etc. But this does not prevent the Legislature from improving the navigation of rivers and the carrying places between them. Such improvements can in no sense be considered as repugnant to the ordinance, but in promotion of its great object; and it would seem to be no violation of the compact if the Legislature should exact a toll, not for the navigation of the rivers in their natural state, but for the increased facilities established by the funds of the State.

"The carrying places between the navigable points at the date of the compact were in their natural state. No way had been opened for a solitary traveler, much less for purposes of commerce.

"In this wild and unimproved State neither the Territorial nor State Legislature could prohibit the passage over these carrying places, nor impose a tax on travelers or merchandise for passing over them. But if the Legislature, with the funds of the State, or through the instrumentality of an incorporated company, should construct a canal, a turnpike road or a railroad, connecting the navigable parts of these rivers, it could be no violation of the ordinance to exact a toll for the use of their ways.

"This would not impair any right given by the compact, but would require a compensation for a benefit conferred; and it would be no sufficient answer to this to say that the traveler or transporter of produce or merchandise had a right to thread his way through the unbroken forests, and therefore these must be permitted to remain in their natural state.

"Navigable rivers and the carrying places between them, are placed on the same footing by the compact; and the only difference between them is, the rivers have established channels whilst the carrying places are unmarked. They are both in their natural condition, and the State, it would seem, is no more prohibited from improving the navigation of the rivers than the carrying places between them; and if a toll may be charged for the increased facilities in the one case, for the same reason it may in the other. We therefore can entertain no doubt that the Legislature may improve, at their discretion, the navigable rivers of the State, and authorize the construction of any works on them which shall not materially obstruct their navigableness. They may build a dam over the Maumee if it shall be so constructed, with a lock or otherwise, as not materially to obstruct its navigation."

(1 McLean's Rep. 352–3.)

And Judge Leavitt, in his opinion, says:

"Certain it is, the clause under review was designed for good, and not for evil. So far as it was intended to restrict the action or power of States or individuals, it was to disable them from the infliction of public injury. The people of the United States were not to be deprived of the use of the water courses in the Northwest Territory, by any unjust or wanton exercise of power over them; but it was not contemplated that the hands of the States should be so tied up as that it should not be in their power to remove a natural impediment to navigation, or avoid such an impediment by canals or other improvements. A contrary construction would be a perversion of the great and primary design of the clause. It would embarrass, if not entirely arrest some of the great works of internal improvement in progress or projected in the West. It would place it in the power of a single individual to thwart the wishes and seriously to injure the interests of entire communities and States. Take the case before the Court as an illustration of the consequences of such a doctrine. By the joint and simultaneous action of the States of Ohio and Indiana, the Erie and Wabash Canal has been authorized and commenced. It is designed as a channel of intercourse between Lake Erie, and the interior of Indiana, and when completed will be greatly promotive of the interests not only of those States, but of a large portion of the Union.

"To sanction the doctrine that for purposes so beneficent and patriotic, it is not competent for those States to use or control the waters of their navigable streams, would be pregnant with the most injurious results. For, it should be borne in mind, that if this power does not exist in these States, it exists nowhere. The same reason for denying it to the States applies with equal force to the Congress of the United States. That body, as the representative of the people of the United States, is a party to the compact, and as much bound by its stipulations as the States individually. If, therefore, the ordinance is to receive a construction that shall tie up the hands of all the parties to the compact from making any improvements in navigation in the West, a fatal blow will have been inflicted upon the prosperity of that region. Upon this principle, if a rapid or other natural obstruction occurs in a stream otherwise navigable, it is not competent to resort to the instrumentality of a dam for the purpose of making an artificial channel whereby to avoid such obstruction. And by a parity of reasoning it would not be competent for a State to authorize the construction of a railroad or turnpike over or along any of the 'portages or carrying places' referred to in the ordinance, and thereby hinder the free and common use of the same, by the imposition of tolls, as a compensation for the benefits of such improvements. Such a construction of that instrument would be subversive of one of its leading designs. It is no answer to the views here thrown out to say that these improvements, when completed, will subject those who use them to the payment of a 'tax, impost or duty.' The object of the ordinance, so far as it provides an exemption from these charges, was to prevent the imposition of any duty for the use of the streams and carrying places referred to in their natural state; and it might also be justly extended in its meaning, so as to prevent onerous and oppressive tolls or exactions for their use, in an improved state. Reasonable tolls, imposed and paid, for the use of a canal or artificial road, are not to be viewed as unjust exactions, but as a fair compensation, in consideration of the increased facilities for trade and intercourse afforded by such improvements." (1 McLean's Rep., 378, 379.)

In another case arising under the same article of the Ordinance of 1787 the same principles are reaffirmed, and it is held that:

"The ordinance had reference to navigable waters in their natural state, and that a State by virtue of its sovereignty may exercise certain rights over its navigable waters, subject, however to the paramount power in Congress to regulate commerce among the several States. *

* * * * * * * * * * * * *

"It would be difficult to maintain the power in any State, to obstruct any of its navigable waters which extend through other States, or are connected with the sea, or with waters falling into the sea. And it might be more curious than useful to inquire, in what the powers of the States generally differ in this respect from the powers of the States bound by the ordinance. A toll charged for the improvement of the navigation of a river is not within the ordinance. In such case the tax would not be for the use of the river in its natural state, but for the increased commercial facilities."—Palmer vs. Commissioners of Cuyahoga Co., 3 McLean's Rep., 226.

A careful examination of the decisions of the Supreme Court of this State, referred to in support of the opinion that the State has no power to collect tolls for the use of its improvements upon the Illinois and Little Wabash Rivers, will show that no such question was before the Court for its determination. But the question really decided was that the right to a free navigation of our western rivers, and the right of the State to provide means for crossing them by bridges or otherwise, are co-existent, and neither can be permitted to destroy or essentially impair the other.—Illinois River Packet Co. vs. Peoria Bridge Association, 38 Ill., 467; City of Chicago vs. McGim, 51 Ill., 266.

The court, in these cases, carefully refrain from expressing an opinion as to whether Article 4, of the ordinance of 1787, is in force in this State or not. (38 Ill. 478.) That which is said by the court concerning the provisions of that ordinance, upon the hypothesis that the same is still in force, when the entire opinions are considered, is not inconsistent with the existence of the power in the State to improve the navigation of rivers within its borders, and collect tolls upon the commerce which has the benefit of such increased commercial facilities. (38 Ill. Rep. 481.) In this case the court say:

"But it is not only the navigable waters which shall be common highways, and forever free, but also the 'carrying places' between the same.

"To understand fully this provision, we must consider the condition of the country through which these streams flowed, and the mode by which the trifling commerce of that region was carried on, when the ordinance of 1787 was adopted. History tells us it was then a barbarous region, peopled by savages, whose frail barks were the only vessels which floated on those waters, and whose light paddles were then their only propelling power. These slight vessels, loaded with the products of the chase or of successful trapping, on their route to Montreal or Quebec, then the great market for furs and peltries, on reaching the highest point accessible to them by water would be unloaded, and the boats and cargo carried on the backs of the employees across by land to another stream, flowing in the required direction. These places were called 'portages,' or carrying places. Who shall say that these noted carrying places shall not, at some future day, be occupied by a railroad, or several of them, and by canals, should the wants of the extended and growing commerce of the fruitful regions where they are demand them? Shall this provision of the ordinance be an insuperable bar to such improvements, and thus fetter forever the commercial energies of that region? All that can be claimed is, that as carrying places they shall remain free as a common highway to all whose interests may require their use as such—interests so trifling and inconsiderable, so dwarfed by the growth and progress of the country, as not to stand in the way of the canal boat, the steamboat and the railroad car. The same considerations apply to the rivers themselves, and must be made practical by the necessities of our existence as a great commercial people." (38 Ill. Rep. 481.)

Should it finally be held that this article of the ordinance of 1787 is still in force, this language shows no disposition on the part of our Supreme Court to overrule the decisions of the Circuit Court of the United States, above cited. It was there held that the ordinance had reference to navigable waters in their natural state; that it was not intended to prevent a State from improving the navigableness of such waters; and that a toll charged for the use of the improvement of the navigation of a river is not prohibited by the ordinance, for in such case the tax would not be for the use of the river in its natural state, but for the increased commercial facilities. (Palmer vs. Com'rs of Cuyahoga Co., 3 McLean 227. Spooner vs. McConnell et. al., 1 McLean 352, 378.)

Your Committee are therefore of the opinion that the State has the right to collect reasonable tolls from such boats or other craft as have the benefit of the improvements made by the State upon the Illinois and Little Wabash Rivers; and that the Canal Commissioners have the legal right to enforce the recent act of this General Assembly, authorizing the collection of such tolls. And your Committee recommend the adoption of the following resolution:

Resolved, That in the opinion of the Senate the State has the right to collect reasonable tolls from such boats and other crafts as have the benefit of the improvements made, by the State, upon the Illinois and Little Wabash rivers, and that the Canal Commissioners have the legal right to enforce the recent act of this General Assembly, authorizing the collection of such tolls.

All which is respectfully submitted.

T. A. BOYD,
W. H. UNDERWOOD,
J. N. JEWETT,
ALLEN C. FULLER,
JAS. K. EDSALL,
JAS. W. LANGLEY,
JAS. W. EDDY,
R. N. BISHOP,
J. H. RICHARDSON.

MARCH 21, 1872.

GOVERNOR'S MESSAGE,

TRANSMITTING TO THE HOUSE

A SPECIAL REPORT SHOWING THE MONTHLY RECEIPTS AND EXPENDITURES OF THE ILLINOIS PENITENTIARY, FOR THE FIVE MONTHS ENDING JANUARY 31, 1872, AND AN ESTIMATE OF THE RECEIPTS AND EXPENDITURES FOR THE TEN MONTHS FROM FEBRUARY 1 TO NOVEMBER 30, 1872.

STATE OF ILLINOIS, EXECUTIVE DEPARTMENT,
SPRINGFIELD, *February* 29, 1872.

HON. WILLIAM M. SMITH,
Speaker of the House of Representatives:

In response to a resolution of the House of Representatives requesting "the Governor to furnish this house with a copy of any and all reports that may have been made to him by the Warden or Commissioners of the Penitentiary, in relation to the affairs of the Penitentiary, that have not actually been laid before this General Assembly, and any other information within his knowledge, in relation thereto," I have the honor to inform the House of Representatives that neither the Commissioners or Warden of the Penitentiary have made any formal report to me in relation to the affairs of the Penitentiary since that laid before the two Houses of the General Assembly, on the 4th day of January, 1871.

It is proper, however, that I should say that the Commissioners and Warden have constantly kept me informed of the progress of affairs at the Penitentiary, by informal and special reports, made from time to time, to afford me information upon particular points relating to the business and management of the institution.

As will be observed by reference to my message communicated to the General Assembly on the 4th day of January, 1871, and the message transmitted on the 24th day of May, 1871, I expressed the opinion that the management of the Penitentiary was unsatisfactory; that its condition and business demanded the most thorough investigation, and changes in the laws providing for its government and control; and in the message of the 24th day of May, I said: "The only practicable system for the successful management of the Penitentiary, in my judgment, is that which combines the retention of complete control of the discipline and government of the convicts with the lease of their labor to persons engaged in special pursuits, as substantially embodied in the bill that passed the Senate at the late session, and was understood to be acceptable to a large number of the members of the House of Representatives. I cannot forbear the expression of the hope that such a measure will meet the approval of the General Assembly."

It was my impression then, and I repeat the opinion now, that under the operation of the bill referred to, which passed both houses and took effect on the 1st of July last, the Penitentiary will cease to be a burden upon the treasury of the State.

I have the honor to submit to the House of Representatives an original letter from John Reid, Esq., President of the Penitentiary Board of Commissioners, and a special report showing the monthly earnings and expenditures of the Penitentiary, and also an estimate of the probable earnings and expenditures of the institution for the remaining portion of the year.

JOHN M. PALMER.

ILLINOIS STATE PENITENTIARY,
WARDEN'S OFFICE, JOLIET, *Feb.* 27, 1872.

HIS EXCELLENCY JOHN M. PALMER, *Governor, Illinois*:

DEAR SIR: Inclosed I send you a statement of the receipts and expenditures of the Illino State Penitentiary, for the five months ending January 31; also an estimate of the receip and expenditures for the next ten months, from Feb. 1 to Nov. 30, 1872. The stateme marked "A"—from Sept. 1 to Nov. 30—is all the receipts and expenditures, as taken fro the books of the Institution, and shows a surplus of over ten thousand dollars. The stateme "B," for December and January, are also taken from the books, except a little for the mon of January, which could only change the figures a few dollars either way, and shows a surpl of nearly seven thousand dollars. This is all the expenses of the Institution: All salari guarding, feeding, clothing the convicts, cash and clothing for discharged convicts, impro ments and repairs, and all the expenses of the Institution.

The estimates for the ten months ending November 30, 1872, are based on the present p roll and our recent contracts for supplies, and our present contracts for labor, with the lowing parties: Selez & Co., 260 men, at 65 cts. per day—shoemakers; Winterbottom, men, at 70½ cts. per day—coopers; Swain, 85 men, at 65 cts. per day—iron and brass cast Hardy and Short, 27 men, at 75 cts. per day—saddlers; Fuller, 200 men—cigar makers.

There are employed on State account: Stone department, 300 men; machinery departm 50 men; teaming department, 18 men.

The estimate of the receipts is based on the labor of eleven hundred convicts, making allowance for sick and in punishment, and cooks, waiters and helpers of over two hundred, which is more than the average of last year.

The estimates for the stone department is based on the earnings of last year, and is below that average.

This will show a surplus for the present year of about fifty thousand dollars, and we think those estimates can be fully relied on.

Hoping this will be satisfactory, I remain, yours respectfully,

JOHN REID.

"A."—*Statement of Earnings and Expenses of the Illinois State Penitentiary, for the last three months of the fiscal year ending November* 30, 1871.

EARNINGS.

		1871. September.	1871. October.	1871. November.
Contract....	*Cigar department	$2,655 15	$2,793 38	$2,617 17
"	*Shoe "	4,365 73	4,873 85	4,246 29
"	*Harness "	543 94	538 88	521 44
"	*Cooper "	....	2,076 42	2,398 37
State........	†Cooper "	1,539 57	....	....
"	†Stone "	8,965 22	7,957 05	7,365 49
"	†Taylor quarry................	1,756 66	1,757 66	1,756 66
"	†Machinery department.........	680 45	680 45	680 45
"	†Teaming "	173 54	173 54	173 54
	Total earnings..............	$20,680 26	$20,350 23	$19,759 40

* Net receipts from contractors.

† Earnings at the rate of the net total gains of the respective accounts for the fiscal year ending Nov. 30, 1871.

EXPENSES.

	1871. September.	1871. October.	1871. November.
*Convict expense...........	$8,009 55	$10,546 53	$10,723 3
*Warden house	1,325 01	1,051 53	1,206 5
*General expense............................	1,519 14	1,458 32	1,729 3
*State of Illinois, citizen's clothes............	553 82	410 41	557 7
*State of Illinois, transportation..............	372 60	356 75	323 6
†Repairs..	658 49	658 49	658 4
†Permanent improvements.................	1,218 34	1,218 34	1,218 3
‡Salaries of guards, not already charged in above accounts	727 51	816 21	757
Wear and tare on property inventoried to the credits of the different expense accounts on Nov. 30, 1870, at the rate of 10 per cent. per annum........	823 18	823 18	823
Total expenditures.................. ...	$15,207 64	$17,339 76	$17,998

* Book accounts.

† Book accounts for September, October and November, 1871. Repairs, $1,975 46; manent improvements, $3,655 02; divided in above statement in three equal parts.

‡ Salaries of guards in cigar, shoe, cooper and harness departments, to be deducted the net receipts from contractors.

RECAPITULATION.

Earnings:		
September	$20,680 26	
October	20,350 23	
November	19,759 40	
Expenses:		$60,789 89
September	$15,207 64	
October	17,359 76	
November	17,998 37	
		50,545 77
Excess of Earnings over Expenses		$10,244 12

"B."—*Statement of Earnings and Expenses of the Illinois State Penitentiary for the first two months of the fiscal year, commencing December* 1, 1871.

EARNINGS.

	1871. December.	1872. January.
* Shoe Department	$4,282 04	$4,794 72
* Cooper "	2,777 82	3,010 27
* Cigar "	2,577 74	2,954 36
* Harness "	537 00	599 44
* Railroad and canal gang	60 50	62 28
† Stone department and quarry	9,000 00	9,000 00
† Machinery department	400 00	500 00
† Teaming "	250 00	250 00
* Foundry "	....	312 16
Total earnings	$19,885 14	$21,483 23

* Book accounts, net receipts from contractors.
† Estimates.

EXPENSES.

	1871. December.	1872. January.
Warden's house	$1,210 76	* $1,748 50
Expenses—including all salaries (except stone foremen), convict subsistence, clothing, light, fuel, cash and clothing for discharged convicts, repairs on prison furniture and fixtures, completing prison furniture and fixtures, etc	15,054 75	16,049 00
Repairs on buildings	61 96	300 00
NOTE.—The December and January expenses are taken from book accounts. The books not having been closed for January when this statement was made out, above figures for January may differ for an immaterial amount from the final figures.		
Total expenses	$16,327 47	$18,097 50

* The increase of the Warden's house expenses in January is caused by the charge of 60 cords of wood and 11 tons of hard coal (at $13). Similar reasons explain the increase of expenses.

RECAPITULATION.

Earnings:		
December	$19,885 14	
January	21,483 23	
Expenses:		$41,368 37
December	$16,327 47	
January	18,097 50	
		34,424 97
Excess of earnings over expenses	....	$6,943 40

"C."—*Estimate of Earnings and Expenses of the Illinois State Penitentiary for the remaining of the fiscal year ending November* 30, 1872.

EARNINGS.

	Per month.	For 10 months
Shoe department, 260 men at 26 days at 65c	$4,394 00	$43,940 00
Cooper " 160 " 26 " 70⅛c	2,925 87	29,258 70
Harness " 27 " 26 " 75c	526 50	5,265 00
Foundry " 80 " 26 " 65c	1,352 00	13,520 00
Cigar " will average, per month	2,500 00	25,000 00
Railroad and Canal gang will average, per month	60 00	600 00
Machinery department will average, "	400 00	4,000 00
Teaming department, " "	200 00	2,000 00
Stone department and quarry, if the profits of last year are taken as a basis, will average at least	9,000 00	90,000 00
Total earnings	$21,358 37	$213,583 70

EXPENSES.

	Per month.	For 10 months
Warden house	$1,600 00	$16,000 00
Expenses, including all salaries (except stone foreman) convict subsistence, clothing, light, fuel, cash and clothing, for discharged convicts, repairs on prison furniture and fixtures, completing prison furniture and fixtures, etc.	15,500 00	155,000 00
Repairs (on buildings)	100 00	1,000 00
Total expenses	$17,200 00	$172,000 00

Note.—Expenses for salaries are based on the present pay-rolls. Expenses for subsistence clothing, fuel, etc., are based on the recent contract for supplies.

RECAPITULATION.

Total earnings	$21,358 37	$213,583 70
Total expenses	17,200 00	172,000 00
Excess of Earnings over Expenses, for 1 month	$4,158 37	
" " " for 10 months		$41,583 70

'MESSAGE FROM THE GOVERNOR.

STATE OF ILLINOIS, EXECUTIVE DEPARTMENT,
SPRINGFIELD, *March* 25, 1872.

HON. JOHN DOUGHERTY, *President of the Senate,*
HON. WM. M. SMITH, *Speaker of the House of Representatives:*

I have the honor to submit to the General Assembly a communication of this date, addressed to me by the Auditor of Public Accounts, in relation to the state of the law for the assessment and collection of revenue.

As will be observed from the communication above mentioned, it is probable that one hundred and fifty millions of property, estimated on a proportional assessed valuation, evades taxation under present laws, so that if, as the Auditor supposes, the property of the State is assessed at one-fourth of its actual value, six hundred millions of dollars of the property pays no taxes. This state of things, even if approximately true, makes it of the greatest importance that the present General Assembly should devise some measure that provides for the imposition of the public burdens upon all property in the State in proportion to its value. And it also appears, from the statement of the views of the Auditor, that it is a matter of extreme doubt whether the changes introduced into the system of county government by the Constitution of 1870 does not, in some important respects, render the present revenue laws inoperative. There is, no doubt, reason to apprehend that the introduction of the system of county commissioners in counties that are not under township organization, and the restrictions upon the exemptions of property from taxation, contained in the 3d section of the 9th article of the Constitution, and other provisions in that article, have so dislocated and deranged the machinery provided by existing revenue laws, as to render their practical enforcement a matter of great uncertainty.

I trust, in view of the probabilities of an early adjournment of the General Assembly, that it will not be considered improper for me to ask attention to the urgent necessity for some general law for the incorporation of cities and towns.

The great value of the Constitution of 1870, in my judgment, is found in the fact that it prohibits local and special legislation "incorporating cities, towns or villages, or changing or amending the charter of any town, city or village," yet the fact that many bills have been proposed in both Houses for that purpose, and that the General Assembly and the Governor have been constrained, the one to pass and the other to approve, some measures that are special and local in their object and spirit, and only general in their form, demonstrates that a comprehensive general law based upon liberal principles, embracing the idea of judicious classification of cities and towns with powers appropriate to each class, leaving much to the people, is a want but little less pressing than a clear, just and equal, revenue law. Unless some such law is speedily provided, no department of the government will be able much longer to resist the demand for laws of doubtful constitutionality, and when either department is forced to yield, it is nearly impossible to return to the rigid but wise rules provided in the Constitution; and I trust I will be pardoned for urging attention to the enactment of laws providing for ascertaining compensation to owners of property taken for public uses. It is doubtful whether any law for that purpose is now in force, or whether any supposed law for that purpose now on the statute books sufficiently conforms to the present Constitution.

The assertion of the rights of the people to their own property as against the State itself, to say nothing of their rights as against corporations and persons who are sometimes intrusted by law with this attribute of sovereignty which can alone take private property, devolves upon the General Assembly. Corporations created for the construction of railroads, and for other popular improvements or works, will appropriate the property they need; no one need fear that they will be long delayed by any effort of a citizen to protect himself; so that the real question to be settled is, whether any effectual remedy exists, under the laws now in force, for the ascertainment of damages any one will sustain by the appropriation of his or her property.

Actions at law or in equity for the purposes are expensive and uncertain, so that a cheap and simple law is of the highest importance.

JOHN M. PALMER.

AUDITOR'S OFFICE, ILLINOIS,
SPRINGFIELD, *March* 25, 1872.

HIS EXCELLENCY JOHN M. PALMER,
Governor of Illinois :

SIR: I have the honor to acknowledge the receipt of your letter of the 23d inst., containing the following inquiries:

First—"Does there exist a necessity for the passage of a general revenue law at the present session of the General Assembly ? If there does, in your opinion, exist such necessity, please give briefly your reasons therefor."

Second—"In case no such law should be passed at the present session, could the old revenue laws for the levy and collection of taxes, in your opinion, be enforced under our present Constitution ? and if not, please state the difficulties which prevent."

In reply to the first question, I have no hesitation whatever in expressing the opinion that there does exist a necessity for the passage of such a law at the present session. I have only time to-day to "briefly," as you suggest, give some of the reasons for that opinion:

As political questions, which have mainly engaged the attention of our people for the past few years, are becoming settled, public attention is being directed to our internal business relations and obligations, and as our great resources and wealth as a State is being rapidly developed, and a corresponding increase of expenses incurred in establishing and maintaining our State institutions, and defraying the expenses of our State and local governments, the principles of taxation and the laws for the levy and collection of State and local revenues are becoming more and more considered and critically examined. Hence some of our old revenue laws, which have heretofore been acquiesced in, will, I am satisfied, be contested, if not repealed, and if contested, will be held by the courts invalid.

The first great necessity for an immediate and radical change and revision of our revenue laws grows out of the undeniable and admitted fact that real estate and tangible personal property in the State have been compelled to pay more than their proportion of the taxes; and from proper evidences before me on which to base an estimate, I do not hesitate to say that intangible personal property, such as moneys, credits, bonds, stocks, etc., in value to the amount of at least one hundred and fifty millions of dollars, has heretofore and will continue to escape or evade taxation under present laws. And when it is considered that this class of property is best able of all property to contribute its share of taxes, and that the present year the probable amount of taxes for State and local purposes will be $25,000,000, it will be seen that a continuance of this state of things is nothing less than positive wrong and injustice.

The greater portion of this property, which at present evades taxation, is owned by railroads, banks, bankers, brokers and stock-jobbers.

A few figures will illustrate this fact:

There are about 7,000 miles of railroad in this State. Eighteen corporations own 4,668 miles of this in the State, and the value of the assets of these eighteen roads, as made to the Railroad Commissioners, and obtained in part from other sources, is about $175,000,000. The assessed valuation of all railroad property in the State for 1871, being 4,860 miles, was only $22,556,126, which amount was increased by equalization to $25,516,042, or about one-seventh of the value, as stated by the roads. However, it is probable that the property of the roads assessed represents an actual value of about $75,000,000, leaving $100,000,000 of value unassessed.

A statement of the banking facilities of the city of Chicago, in December, 1871, shows the amount of individual deposits to be $29,483,585 in the banks of that city, other than savings banks; and the capital and surplus funds of bankers, brokers, etc., other than savings and national banks, to be $3,665,546, which amount, added to the amount of individual deposits, make the sum of $33,149,131. While Chicago has less than one-eighth of the population of he State, I will assume, and I think correctly, that said city, in point of wealth, represents one-fifth of the State. Therefore, having $33,000,000 of this kind of property in Chicago, there should be five times said amount in the State, or, in round numbers, $165,000,000. There was assessed in the State, in 1871, the sum of $14,751,835 as moneys and credits; the sum of $283,933 as bankers'. brokers' and stock-jobbers' property, and the sum of $1,799,795 as bonds, stocks, etc., making total assessed sum of all these items, $16,835,563, which amount deducted from the $165,000,000, leaves, in round numbers, $148,000,000 of this class of property untaxed. Or if that which was assessed was valued at one-third its true value, in such case it would leave about $115,000,000 unassessed. In arriving at the assessed figures, you will observe that I have taken the item of *credits* and *bonds*, *and stocks*, *etc*. Neither of these classes of property are included in the $33,149,131 obtained from the statement of Chicago banks, and made the basis of my estimate. If the *credits* and *bonds*, *stocks*, *etc*., of Chicago were added to said figures, and then the sum thereof multiplied by *five*, for the remainder of the State, the $165,000,000 of value would be very materially increased.

These figures and reliable estimates, made from returns to this office and information in my possession, satisfy me that, exclusive of national and savings banks, there is a loss of revenue, *taking only proportionate values*, upon at least $50,000,000 of money capital alone

There are other items or kinds of property to which I might call your attention, which it may be easily shown, by facts and figures, pay but a small proportion of taxes, but none others, probably, to the extent of the interests to which I have herein specially referred you.

To your second question, I have to reply that there are reasons which seem to me to be almost if not quite insurmountable, why the present revenue laws fail to provide for the Constitutional requirements on the subject of revenue—to some of which I call your attention.

Section 60, Chapter 89, Gross' Statutes, permits exemptions of property from taxation *of classes of persons*; whereas, other persons who own similar property are required to pay tax thereon. In other words, property other than as specified in the Constitution which the Legislature may exempt, is here exempted. I refer to property of merchants, manufacturers, dealers and others.

Section 62, same Chapter, virtually exempts bankers', brokers' and stock jobbers' property. Although this property is taxable under the law, yet it escapes almost entirely from taxation, from the fact that a specific mode is prescribed for assessing it, which has to be followed by the assessor, and in so doing, such property is permitted to escape taxation. This statement is true and applicable to the assessment of the property of railroads, which property, although all taxable, yet escapes taxation to a great extent by and through the special mode laid down in the law, and required to be followed by assessors in assessing it. Therefore, in these cases the law, by its inefficiency, exempts property from taxation (as fully so as if done in direct terms) not authorized by the Constitution, and thus fails to tax property required to be taxed.

Sections 59 and 60, same Chapter, effectually exempts from taxation all manufactured articles, or property, either in the hands of the manufacturer or an agent. For instance: take the single item of high-wines in the State on the first of April, and I doubt not its value exceeds the $2,367,178—the whole amount of "manufactured articles" assessed in the State for the year 1871.

Sections 60 and 62, same Chapter, provides for obtaining the value of property of a class of persons by average of time, which in its operation may prove either in favor of or against such persons. When against, it appears to me, the discrimination would be sufficient cause to destroy the assessment. If this is true, then others whose property is not subject to this rule might defeat their assessment, because the law was not uniform in its operation for obtaining valuations of all property in the State. Without doubt it could be easily proven that such discrimination enabled capital or other property employed in certain classes of business to escape its just proportion of taxation.

I have referred you to sections of the assessment law governing counties under township organization. The same sections, although differently numbered, are in the assessment law for counties not under township organization.

Serious, if not insuperable difficulties will arise in administering the present laws for the assessment of property and the collection of taxes in counties not under township organization, in consequence of the change of government in such counties. Under the Constitution of 1848 the county affairs in such counties are entrusted to the county court, composed of the county judge and two justices of the peace, and at nearly every step of the assessment of property and the collection of taxes under the present laws, this tribunal acts an important part. By the new Constitution the county court is differently constituted and vested with different jurisdiction, and the jurisdiction over county affairs is, by Article X, Section 6, vested in the board of county commissioners. By Section 240, Chapter 89, Gross' Statutes, if the treasurer fails to give bond, his office shall be declared vacant and the vacancy filled by the county court. By Article VI., Section 32, the county board is expressly vested with the authority to fill all vacancies in county offices. No one will seriously contend that the Constitution amends the law which differs from it. There is no doubt where the law and the Constitution differ, the law must be *legislatively* remedied, or it will be held unconstitutional. To recite and amend the various sections to which this objection applies in the revenue laws now in force in counties not under township organization, would involve the re-enacting of the largest part of the revenue laws, applicable to such counties.

I, therefore, am of the opinion that it is at least very doubtful whether under the present Constitution the old revenue laws can be enforced. And the very fact that serious legal doubts would arise on this subject would endanger and render practically inoperative the execution of the old laws.

In conclusion, and for the foregoing reasons, among others, I cannot doubt that a failure to pass a general revenue law at the present session, would be little short of a calamity to the people of the State.

Yours respectfully,

C. E. LIPPINCOTT,

Auditor Public Accounts.

REPORT OF ADJUTANT-GENERAL DILGER.

STATE OF ILLINOIS, ADJUTANT GENERAL'S OFFICE,
SPRINGFIELD, *December* 10, 1871.

HIS EXCELLENCY, JOHN M. PALMER,
Governor of Illinois :

SIR : The business of the office of Adjutant-General has not changed in nature nor extent since my second annual report was submitted to your Excellency, and I shall in this, my third annual report for the year ending November 30, 1871, lay only such matter again before you which, in my opinion, deserves special attention.

1. *The introduction of a militia law ;* a law to encourage the volunteer militia, to improve their efficiency, and to enable the officers to enforce discipline within their commands. I beg leave to call the attention of the General Assembly to the provisions of the law adopted since 1866 by the State of Ohio, which, combined with the ideas set forth in my last report, could not fail to create, at a small expense, a thorough military organization. I am constantly urged by the militia companies in the different sections of the State (companies almost exclusively composed of veterans of the late war) to plead their cause, and I believe that the promptness and cheerfulness with which they responded to your call during the Chicago calamity, more than justifies a favorable consideration of the subject.

2. I must again call your attention to *the indebtedness of the State to the U. S. Ordnance Department* (for arms issued to Illinois regiments in the early part of the war), *to the amount of* $91,660 70, upon ground of which the Department refuses to make any further issue of ordnance and ordnance stores for the use of the State militia, until a settlement shall be accomplished. A careful examination of the papers of the former ordnance officer, and the facts connected with the issue of said arms, convinced me that the whole charge against the State is improperly made, and I am confident that I shall be able to adjust the accounts by a personal attendance to the matter in Washington, which

would give the State the benefit of her quotas due from the United States, since 1869, amounting to $33,105 87, for the armament of the State militia.

At the same time, I desire to confer with the Adjutant-General as to the proper mode to *provide discharges* for such of our Illinois soldiers who have never received any at all, and to secure copies for those who have lost the original ones. The first class alone comprises *over twe ty thousand*, as the annexed schedule will show; the second not many less—most having lost their documents, without their own fault, by fire, water, or through the carelessness of claim agents. In consideration of the fact that our Western soldiers show great anxiety (manifested by daily and numerous applications reaching this office) to avail themselves of the benefit of the Soldiers' Homestead law, on ground of honorable discharges from the army, a speedy and more just arrangement ought to be effected to preserve the soldier's interest, and especially to modify the recent instructions received from the War Department in regard to the second class, who are now compelled solemnly to resign any claim whatever on the U. S. Government, before a copy of a discharge is furnished.

3. The repeated movements introduced during the sessions of this General Assembly, either *to abolish the office of Adjutant-General*, or at least reduce the salaries of the employees to a minimum, make it necessary for me to touch this subject also. The slight value in which the office apparently is held by a large portion of the Representatives, results from a want of information as to the business transacted, and its importance to those concerned. This office is the *only bureau of reference* for the soldiers, their friends and relatives, and for various departments of the Federal Government, especially the *Treasury and Pension Departments*, and an examination of only one day's mail will show to what extent information is wanted and given, and would perhaps convince the opponents of the office that, although any one may be able to fill it, a certain degree of responsibility rests with the officer in charge, which ought to protect him from being considered a mere ornamental and unnecessary hanger-on to the Executive Department. If not the voluminous records necessary for the proper transaction of the business were a serious obstacle to any removal, I should recommend the transfer of the office to the charge of the Secretary of State, because no reliable man will be able to undertake the exclusive management of the office at the salary proposed for the future.

During the *Chicago fire* the armories of most of the militia in that city were destroyed, and the State has sustained a *loss of about* $14,000 ordnance and ordnance stores for which bonds are filed in this office. I would respectfully suggest to relieve these bondsmen of their responsibility.

All other matters connected with the conflagration I have laid before you in my special report of the 15th of November, and only submit, in addition, a letter from Col. Julius White, commanding "First Regiment National Guards," in regard to *pay for services rendered* by several companies of said regiment, under special orders from Lieut.-General Sheridan, U. S. A. Annexed you will find statements of the expenses of the office, of the Ordnance Department, and of the militia, as far as they have reported.

I also lay before you a roster of the militia officers commissioned since 1867, and *a roll of losses of all Illinois regiments during the late war.* This is the first complete record ever presented, and has been compiled with great care by Captain E. L. Higgins, in charge of Ordnance Department—a work for which great credit is due him.

I have the honor to remain, Sir,
Very respectfully, your obed't servant,
H. DILGER,
Adjutant General.

HEAD QUARTERS FIRST REGIMENT I. S. M.,
CHICAGO, *Nov.* 21, 1871.

GEN. H. DILGER, *Adjutant General:*

SIR: Upon assuming command of this regiment, I learn that on or about the 10th day of October last the men composing it were mustered into service as volunteers, for the preservation of the peace in this city, for a period of twenty days, and that at the expiration of the time they were duly mustered out having served actually eighteen days.

Most of the men are such as depend upon their daily earnings for support, and many of them lost their all in the great fire which rendered their services necessary for the protection of the property and persons of their neighbors.

It is apparent that these services ought to be remunerated, and as I was not at the time in command of the regiment, I am not officially informed whether the service referred to is recognized as having been rendered to the State by the Governor, although the contrary may perhaps be inferred from the message of his Excellency, the Governor, to the Legislature.

If not, it is intended to make application to the city authorities for suitable compensation for the services mentioned.

I, therefore, respectfully request that the subject be laid before the Governor, and his reply communicated to me in writing.

Very respectfully, your obed't servant,

JULIUS WHITE,

Col. Commanding.

P. S.—I am informed muster-out rolls have been forwarded to you.

J. W.

MINORITY REPORT.

The undersigned, minority of the Committee on Judiciary, to whom was referred a resolution asserting the power of the State to levy and collect tolls upon boats and craft, passing through and using the locks and improvements of the navigation of the Illinois and Little Wabash rivers, has been unable to concur in the report of the majority of the committee, either upon the right of the State to collect tolls, or the policy of endeavoring to establish or acquire such a right; and regards the adoption of the resolution reported by the majority of the committee, as repugnant to the law, and to the rights of the citizens of the United States, and fraught with danger to the people of this State, by establishing a precedent that may at some future day be used as a pretext upon the part of the states bordering the Mississippi, to levy tolls upon the boats and craft traveling upon that river. The question whether the Illinois or Little Wabash rivers or either of them are navigable waters at the places where the improvements have been made, is a matter of fact upon which the minority expresses no opinion.

If these rivers, or either of them, or any part thereof, were not navigable in their natural condition, and were made navigable by reason of such improvements, then the minority believes the right of the State to collect reasonable tolls on such portions made navigable, cannot be questioned.

But assuming, as is done by the majority report, that these *were* navigable waters in their natural condition, then in the opinion of the minority there is no power in this State to levy "tax, impost or duty" for the use thereof, either with or without improvements. And this view of the law is not only not contradicted, but on a full examination, will be found to be supported, by the authorities cited by the majority of the committee, in their report.

The case cited in 1 McLean, was an application to the U. S. Circuit Court for Ohio, at the December term, 1838, for an injunction upon the part of the owner of eighty acres of land situated at the head of the Maumee rapids, (which were sixteen miles in length above Maumee bay) together with a small island in the Maumee river, to prevent the erection of locks and dams which were authorized by the State of Ohio, for the purpose of taking water into the Wabash and Erie canal, and for making a navigable channel through and around these rapids, connecting by slack water and canal, the Maumee bay, which is navigable for steamboats and other vessels that ply upon the lake, to that part of the river above where "a steamboat and other vessels ply" between the point of the proposed dam and Fort Wayne, a distance of one hundred and twenty miles. In this case it will be seen that the object of the injunction was to restrain, *not enlarge*, the navigableness of the river: not to assert the right of the complainant to have the channel free from obstruction, "tax, impost or duty;" but to prevent making navigation through and around these rapids where it was not navigable in its natural condition; which would destroy a "mill site," and allow boats to pass between the lower and upper navigable waters of this river, instead of loading and unloading their cargoes at or near the land owned by the complainant, after having been, or to be, transported over these sixteen miles of portage to the river below; and thereby damage the land of the complainant, by preventing the building of a town thereon, which was the real injury sought to be prevented by the injunction of the court, and in the profuse opinion of Judge Leavitt on this remarkable case, the broad sweeping language quoted by the majority, was used. It will be remembered that this opinion, so elaborately quoted, and confidently relied upon, is not from a supreme court, nor even from a presiding judge, but is that of an associate judge in the U. S. circuit court of Ohio, in the year 1838, when that court could not have ranked higher, if as high, as do the average of the circuit courts of our State to-day, and especially when we consider the language relied upon, was by way of argument or *dictum*, it ought not to weigh against the distinct expression of our own supreme court. While the law as stated in the dictum of the associate judge is questionable, the minority of your committee concurs in the decision of the court, as delivered by Judge McLean.

The substance of this decision was, that the State had ample power to make a navigable channel through or around these rapids, where naturally there was no navigable channel, and to charge toll for the use of the improvement thus made. Nor does the minority hold to a different theory of the law from that held by that same learned judge, (McLean) in the case referred to by the majority in 3 McLean, 227. In this case the court says: "This application is made under the fourth article of the compact in the ordinance of 1787, which declares 'that the navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same, shall be common highways and forever free, as well to the inhabitants of said territory as to the citizens of the United States, and those of any other States that may be admitted into the confederacy, without any tax, impost or duty therefor.' "

"The ordinance had reference to 'navigable waters' in their natural state. No tax, impost or duty shall be imposed for their use; and as they are to remain 'common highways' there can be no obstruction to their use."

"Now this provision of the ordinance does not prevent a State from improving the navigableness of these waters by removing obstructions, or by dams and locks so increasing the depth of water as to extend the line of navigation. Nor does the ordinance prohibit the construction of any work on the river, which the State may consider important to commercial intercourse. A dam may be thrown over the river, provided a lock is so constructed as to permit boats to pass with little or no delay, *and without charge*."

The condition here made, upon which the State may erect the dam across the river is, that there shall be no delay to boats, *nor charge for the use of the lock and dam*, and to this view the minority adheres.

It will be observed that in the cases cited by the majority, except those from Connecticut, the question of the right of the State to collect tolls for improvements, was in no case the issue before the court. The decisions of the Connecticut court seem to adopt the theory that tolls might be collected from vessels that could not navigate the river without the improvement, but that other vessels capable of navigating the river in its natural condition, should go untaxed.

Even if this should be the law in Connecticut, it cannot be the law in any of the States carved out of the northwestern territory, if it is conceded that the fourth section of the ordinance of 1787 is in force, which it is true has been questioned in an opinion of Chief Justice Taney upon a question of jurisdiction involving the liberty of three slaves. In this case Judge McLean declined to decide this point, but concurred with the other judges against the jurisdiction of the federal court; although in another case the learned judge decides that the 4th section of the ordinance is in force, and says: "This compact was formed between political communities and the future inhabitants of a rising territory and the states which should be formed within it, and all who became inhabitants of the territory made themselves parties to the compact. And the compact so formed could only be rescinded by the common assent of those who were parties to it." 1 McLean, 344.

Judge Catron, in concurring with the Chief Justice as to the absence of jurisdiction in the case, upon different grounds, says on the subject of the ordinance : "For thirty years the State courts within the territory ceded by Virginia, have held this fourth article to be in force and binding on them respectively, and I feel unwilling to disturb this wholesome course of decisions which is so conservative of the rights of others. * * *" 10 How. 99.

More than twenty years have elapsed since the writing of this opinion, and the courts of these States have not changed the current of their decisions on this subject, and it would avail no good to the people of this State for this Legislature to adopt a different doctrine, even upon a seeming conflict between the State and federal courts on that question.

The minority concurs in the recent opinion of the Attorney General on this subject, and believes that the same view is sustained by the decision of our own supreme court, delivered by Judge Breese, where it is said : "But what is the provisions of Art. 4 of the ordinance of 1787? It is this: The navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between the same shall be common highways and forever free, as well to the inhabitants of said territory as to the citizens of the United States, etc., without any tax, impost or duty therefor. The meaning of this expression; "shall be common highways and made forever free," is made very manifest by the concluding words, 'without any tax, impost, or duty therefor.' This river (the Illinois) is a common highway, free to the Indian in his bark canoe, and to every other vessel floating upon the water, whether propelled by animal power, by the wind or by the agency of steam. It is a common highway, free and so forever to remain, to all citizens of the United States, no matter where residing, not one of whom, in the free use of it, can be compelled, under any pretext, to pay any tax, impost or duty whatever therefor, nor against its use shall there be an obstruction." Ill. R. Packet Co. v. Peoria Bridge Association, 38 Ill., 478.

And again, this same judge, whose profound legal learning and ability has for more than a whole generation held him pre-eminent as a beacon light for the guidance of the courts and profession wherever the salutary principles of the common law have been recognized, delivering the unanimous decision of himself and his two associates, those learned jurists, Justices Walker and Lawrence, who have each in turn occupied the position of Chief Justice of the supreme court, says: "And remarking upon the provision of the ordinance of 1787, that the navigable waters leading into the Mississippi and St. Lawrence, and the carrying places between tde same, shall be common highways, and forever free, as well to the inhabitants of the territory as to the citizens of the United States, and without any tax, impost or duty therefor, it was said there was no restriction on the power of the State, if the ordinance was yet in force, to use the most improved artificial means of crossing those waters. The ordinance only prohibits its obstruction, and the imposition of a tax or duty on its navigation. Nothing less than a total obstruction by dams, or other impediments of that nature, would be a violation of its provisions. Navigation upon them would not then be free, for the very current itself would be in custody, and mankind be thereby excluded from its profitable use. That it does not mean that the river and its navigation shall be a common highway, free from all and every condition, but only that it shall be free from obstruction, and free from any burden imposed in the shape of a duty or tax." City of Chicago vs. McGinn, 51 Ill. 270.

It is admitted by the majority that every citizen has an affirmative personal easement in the navigation of these rivers in their natural state. This incorporeal right is his property, (Bouv. L. D., 394, Property) which he has the right to enjoy in a lawful manner "without tax, impost or duty therefor."

The shores of navigable waters, and soils under them, were not granted by the Constitution to the United States, but were reserved to the states respectively, and the new states have the same rights, sovereignty and jurisdiction over this subject as the original states. Pollard vs. Hagan, 10 How. 212. Eldridge v. Cowell, 4 Cal. 80. And while the title to the soil in these rivers, above tide water, is in the riparian owner, the sovereign power of the State is a paramount title.

"An easement or servitude is a right which one proprietor has to some profit, or benefit or lawful use out of, or over the estate of another proprietor." Wash. on Easements, Ritzer vs. Parker, 8 Cush. 145.

The servient estate is in the State of Illinois—the dominant in each citizen of the United States, the right of the state being subject to the right of the citizen.

The navigable rivers are highways over which the public have the right to travel the same as on roadways, except that being natural highways not made by the municipal government for the use of its citizens alone, it has no power to obstruct or close them without the consent of the whole people of the United States.

Highways are easements. In them the public acquire, by their location, a right of way, with the powers and privileges incidental to that right, such as digging the soil, using the timber and other materials, found within the limits of the road, in a reasonable manner for the purpose of making and repairing the road and its bridges, yet the former proprietor of the soil still retains his exclusive right in all the mines, quarries, springs of water, timber and earth for every purpose not incompatible with the public right of way. Wash. on Easements, 214. He is in fact the owner of the fee subject only to this public easement, and should he desire to do so, he unquestionably has the right to repair in a reasonable manner on his own land, and to erect proper bridges and increase the facilities for travel, but who will say that he has the right to collect tolls thereon, or prevent the public from the use of the same.

The improving or changing however so much of this servient, cannot defeat or impair the dominant estate any more than the improvement of a lot would defeat an incumbrance upon it.

That which has been declared by the ordinance to be forever free, should be held to be forever free; not merely free until some State desired to blend its property with the property of the citizen in the easement, so that to get the benefit of the natural highway, he would be compelled to use the improvement, and then pay a tax for the improvement. That would be to tax the citizen for the exercise of the right in which he was guaranteed. It is a well settled principle of law that that which cannot be done directly, may not be done indirectly. A toll of the kind proposed is in the nature of a tax, and the right to tax should be clearly shown before its collection should be sanctioned. The right of the State to collect tolls necessarily implies the right to prohibit the use of the river. The law is clear that while the State has power to increase the navigableness of rivers, it has no power to obstruct them. The placing of improvements in navigable rivers, dedicates such improvements to the public use, to the same extent as was the river in its natural state.

For these reasons, among others, the minority recommends the the adoption of the following

RESOLUTION.

Resolved, That in the opinion of the Senate, there is no power in this State to collect tolls from any boats or craft navigating the Illinois, Little Wabash, or other navigable rivers in their natural condition, nor for the use of the improvements made therein, but that all the navigable waters leading into and through the Mississippi to the Gulf of Mexico, or into the St. Lawrence, as well as the carrying places between the same, are common highways and forever free to the inhabitants of this State and to the citizen of the United States without tax, impost or duty therefor, and when this or any other State exercises its authority in improving any navigable river by the building of locks and dams, removing obstructions therefrom, building levees, erecting and maintaining lighthouses, buoys or landmarks, or in any way improving or increasing the navigableness thereof, or the facilities for its navigation, all such improvements become a part of the common highway, and subject to the easement therein of every citizen of the United States to the same extent as such navigable river may have been in its natural condition.

All of which is respectfully submitted.

J. McNULTA.

REPORT

OF THE

Commissioners Appointed to Revise and Re-write the General Laws of the State of Illinois.

SUBMITTED TO THE GENERAL ASSEMBLY,
APRIL 8, 1872.

REPORT.

To the Honorable Senate and House of Representatives of the Twenty-seventh General Assembly:

The undersigned, Commissioners appointed to revise and re-write the Statutes of this State, beg leave to present the following report:

By the act entitled "An act to aid in the revision of the Statute laws of this State," approved January 29, 1869, the judges of the circuit court were required "to carefully note and observe the redundancies, omissions, inconsistencies and imperfections of the public statute laws of this State," and the Judges of the Supreme Court were required to examine and compare such reports and suggestions and to submit so much and such parts thereof as they should deem proper to the judiciary committees of the Senate and House of Representatives at each session of the General Assembly; or in case of the appointment of a Commission or Board of Revision of the Public Statutes, said reports and suggestions of the Supreme Court should be made to such commission or Board.

The act under which we were appointed ("An act to provide for the revision of the Statutes,") was approved March 8, 1869, and provided that we *revise and re-write* the statute laws, and make a printed report of our revision to the present session of the Legislature.

From the terms of the acts above referred to, and from the necessities of the case, we inferred that a thorough revision of our public Statutes, embodying in the text the many amendments which had been made to nearly every part of our law, rejecting the redundances, simplifying the language and adapting their provisions to the advanced views of our people, was desired. The undersigned, in conjunction with the Hon. Wm. E. Nelson, appointed with us as Commissioner, but now a member of the House of Representatives, entered upon the work in June, 1869, with the expectation and determination to report our revision, in the form of a book, to this General Assembly, in strict conformity with the law under which we were appointed. The adoption of the new Constitution in the meantime, changing in many respects the policy of the legislation of the State, and the machinery for the execution of the laws, not only made this plan of our work impracticable and uselessly expensive and required a revision of that part of our work which had then been completed, but demanded a large amount of new and important legislation to cover cases which were heretofore provided for by special legislation.

Under the provision of the new Constitution, that "No act hereafter passed shall embrace more than one subject, and that shall be expressed in the title," it was thought by us that the General Assembly could not pass upon our work as a whole, but that it would have to be introduced in the form of separate bills under appropriate titles; and under the provision of the Constitution which prohibits special legislation, "in all cases where a general law can be made applicable," it was apparent to us that a revision of our Statutes would be very incomplete and unsatisfactory, unless it embraced an amount of new legislation which it would be unwise for us to attempt without the aid of the varied experience and knowledge of the members of the General Assembly. We therefore concluded not to present our work in the form of a book, believing that it would necessarily be incomplete and unsatisfactory and would incur an unnecessary expense. These views were freely discussed in a joint meeting of the Judiciary Committees of the Senate and House of Representatives in January, 1871, and we were then by them instructed to report our work in the form of separate bills under proper titles, and to divide them between the two houses as we might elect.

We have, therefore, as you are aware, reported the greater part of our work in the form of such bills, some to the Senate and others to the House of Representatives. The greater number of these bills are strictly revisions of the old statutes on the subjects embraced in them, with such modifications and additions as seemed to be demanded. The others are intended to supply such legislation as is rendered necessary by the provisions of the new Constitution. They have been carefully considered by the committees to whom they were referred. Improvements suggested by other bills introduced by members, and from the experience and wisdom of the committees and members of the several houses of the Legislature, have been freely introduced, and we feel confident that the result will more than justify the wisdom of the course taken by the Commission with the approbation of the committee, as before stated. The following is a synopsis of the bills reported by the Commission:

House Bill No. 120—Bail in Civil Cases. Approved Jan. 22, 1872.

House Bill No. 150—Attachments in Courts of Record. Approved Dec. 23, 1871.

House Bill No. 152—Drovers. Approved March 15, 1872.

House Bill No. 153—Marks and Brands. Approved March 29, 1872.

House Bill No. 247—Estrays. Committee of the Whole.

House Bill No. 248—Garnishment. Approved March 9, 1872.

House Bill No. 249—Attachments before Justices of the Peace. Approved Feb. 9, 1872.

House Bill No. 341—Practice in Chancery. Approved March 15, 1872.

House Bill No. 372—Receiving and Delivery of Grain by Railroads. Approved April 10, 1871.

House Bill No. 433—Evidence and Depositions. Approved March 29, 1872.

House Bill No. 450—County Courts. On third reading in House.

House Bill No. 487—Roads and Bridges. This is No. 340 in Senate; passed both houses.

House Bill No. 574—Fees and Salaries. Embraced in House bill No. 697, which is passed.

House Bill No. 577—Counties, County Seats and County Government. This is embraced in House bill No. 823, except the part relating to County Seats, which is provided for in another bill.

House Bill No. 578—Township Organization. Referred to Committee on Counties and Township Organization.

House Bill No. 658—Justices and Constables. Approved April 1, 1872.

House Bill No. 676—Forcible Entry and Detainer. Passed the House.

House Bill No. 693—Masters in Chancery. Passed both houses.

House Bill No. 710—Notaries Public. Pending in House on Senate amendments.

House Bill No. 728—Elections. Approved April 3, 1872.

House Bill No. 730—Insolvent Debtors. Passed the House.

House Bill No. 731—Bastardy. Before the Governor.

House Bill No. 759—Interest. Pending on Senate amendments.

House Bill No. 760—Arbitrations and Awards. Passed both houses.

House Bill No. 817—Jurisdiction of Police Magistrates. Defeated in the House.

House Bill No. 827—Sale of unclaimed Baggage. Passed the House.

The Warehouse bill, which was approved April, 1871, was substantially the same as that reported by us to the Senate.

Senate Bill No. 31—Mortgages. Pending in House on Senate amendments.

Senate Bill No. 98—Jurors. Pending in House.

Senate Bill No. 99—Conveyances. Approved March 29, 1872.

Senate Bill No. 100—Mills and Mill-dams. Approved March 22, 1872.

Senate Bill No. 101—Paupers. On third reading, in Senate.

Senate Bill No. 102—Penitentiary. Referred to Committee on Penal Institutions, which reported as a substitute Senate Bill No. 186, which is passed and approved.

Senate Bill No. 121—Practice in Courts of Record. Approved February 22, 1872.

Senate Bill No. 125—Reform School. Passed Senate.

Senate Bill No. 144—Wills. Approved March 20, 1872.

Senate Bill No. 145—Descent of Property. Pending in House.

Senate Bill No. 146—Ejectment. Approved March 20, 1872.

Senate Bill No. 164—Warehouses and Inspection of Grain.

Senate Bill No. 165—Contracts. Approved March 19, 1872.

Senate Bill No. 185—Drainage. Approved April 21, 1871.

Senate Bill No 253—Annexing and Excluding Territory from Cities. Pending in House.

Senate Bill No. 336—Guardians and Wards. Pending in House.

Senate Bill No. 337—Administration of Estates. Approved April 1, 1872.

Senate Bill No. 340—Roads and Bridges. Passed both Houses.

Senate Bill No. 361—Registration of Drainage Bonds. Pending i House.

Senate Bill No. 398—Limitations. Pending in House.

Senate Bill No. 399—Exemptions from forced Sale. Approve March 22, 1872.

Senate Bill No. 401—Judgments, Decrees and Executions. A proved March 22, 1872.

Senate Bill No. 447—Attorneys General and State's Attorneys. A proved March 22, 1872.

We have also assisted in preparing and re-constructing a number other bills for the action of the General Assembly, some of which ha passed and others are still under consideration; and Mr. Hurd, of o Commission, has spent considerable time with the committees in pe fecting several bills, such as the Senate Revenue Bill and the City Incorporation Bill, and others.

We have also completed, or partially completed, revisions of the following chapters, viz: Abatement, attachments of boats and vessels, courts, criminal jurisprudence, estrays, frauds and perjuries, fugitives from justice, idiots, lunatics and spendthrifts, landlord and tenant, negotiable instruments, surveyors, and venue, which we have not reported, partly because we believed that they would not be acted upon, for want of time, by the present General Assembly, but mainly because we wished to harmonize them with the provisions of the other parts of the revision, so that the whole might be consistent, and, as near as possible, complete.

There are several chapters of the Revised Statutes of 1845 that need to be revised; among the most important may be mentioned, the Criminal Code, Abatement, Attachment of Boats and Vessels, Courts, Estrays, Frauds and Perjuries, Fugitives from Justice, Idiots and Lunatics, Landlord and Tenant, Negotiable Instruments, Surveyors, Venue, mentioned above, and Apprentices; Chapter 13, Auditor and Treasurer; Chapter 26, Costs; Chapter 28, County Treasurer and County Funds; Chapter 34, Dower; Chapter 55, Jails and Jailors; Chapter 62, Laws; Chapter 64, Licences; Chapter 66, Limited Partnerships; Chapter 71, Mining; Chapter 74, Oaths and Affirmations; Chapter 77, Officers; Chapter 78, Official Bonds; Chapter 87, Records and Recorders; Chapter 88, Replevin; Chapter 90, Revised Statutes; Chapter 99, Sheriffs and Coroners; Chapter 104, Trespass.

Some of these chapters need but slight changes, such as substituting County Board for County Court, or, County Commissioners Court; and others require important changes and additions to make them meet the requirements of the Constitution and the wants of the people, as well as to make them accord with the legislation of the present session.

There are a large number of local laws that have not been repealed in terms, and which are inconsistent with the Constitution, and should be repealed.

There will, also, be a necessity for reconciling some of the laws of the present session. Though no legislature could have been more careful, as it seems to us, to avoid conflicts in the various bills which it has passed, than the present General Assembly has been, yet it would be truly wonderful if many conflicts did not occur in such a vast amount of legislation.

The Hon. Wm. E. Nelson, one of the revisors, continued to act with the undersigned until the meeting of the General Assembly, when he relinquished his attention to the revision for the purpose of devoting his entire attention to his duties as Representative, deeming it inconsistent for him to hold both positions at the same time. Though he has not been able to act with them during the session of the Legislature as they desired, the undersigned feel grateful to him for his suggestion to them, privately, and his attention to their work when before the committees, as well as his aid in perfecting them in the House.

The Commissioners do not regard it as their duty to urge the Legislature to take any particular course in regard to the completion of the revision. That the chapters which have been mentioned above, will, of necessity, be revised either by a commission, or by some subsequent Legislature without such aid, there can be no doubt. The necessity is imperative. There is, also, a call for the publication of the entire revision when it shall be completed; and it has been the expectation that such a book would be published, either upon the adjournment of this or the next Legislature.

All of which is respectfully submitted.

H. B. HURD,
MICHAEL SCHÆFFER,
Commissioners.

NOXIOUS INSECTS IN ILLINOIS.

INTRODUCTION.

[Second Report.]

To His Excellency, John M. Palmer,
Governor of the State of Illinois:

Sir—I herewith transmit my second annual report upon the Noxious Insects of Illinois.

A few words are necessary, by way of introduction and explanation. It is perhaps generally known to those who take an interest in such matters that the whole of the first edition of the first annual report,—comprising five thousand copies—was burnt, in company with other state documents, in the public bindery, at Springfield, on the 23d of February, 1871. Near the close of its session, the General Assembly ordered the reprint of a part of these documents, and amongst others, the report of the State Entomologist. This reprint was made in the month of August, from a single copy, which was the only one that happened to be preserved, the manuscript also having been mislaid and lost. The printing was done without the supervision of the author, and though for the most part correct, a considerable number of slight verbal errors were overlooked which, so far as they have been detected, have been corrected under the head of *errata*, at the end of this report.

In the introduction to that report I stated my intention, as soon as the work of preparing it was off my hands, to devote my time for the remainder of the winter, to assorting and labeling the duplicates in the Walsh collection and my own, with the view of furnishing a suite of the insects of the State for the Industrial University, in compliance with one of the requirements of the law by which the office of State Entomologist was created. Accordingly, the greater part of the winter was devoted to this work, and the labeling of the specimens in the two most extensive Orders—the *Coleoptera* and the *Lepidoptera*—was completed. It was my intention to go through with the other Orders in the course of the winter of 1871 and 1872, so as to have a tolerably full suite of the insects of the State, in all the Orders, ready to be transmitted to the Industrial University in the spring of 1872. But the element of fire, which is so terrible when beyond the reach of human control, has again thwarted my designs. The great conflagration which laid the city of Chicago in ashes, included in its fatal embrace, amongst many other fine buildings which were supposed to be fire-proof, the Chicago Academy of Sciences, which contained the most valuable scientific treasures of the West, and amongst them, the extensive collection of insects known as the Walsh Cabinet. When we consider the many years which that indefatigable entomologist had devoted to the accumulation of this collection, and still more when we take into view the scientific research and the extensive correspondence and exchanges, by which he had succeeded in attaching to almost every specimen its correct scientific name, thus making it a standard of reference, not only for the entomologists of this State but of the country generally—it is a difficult task for the lover of this science to reconcile himself to this almost irreparable loss. It is a source of some consolation that the greater part of the duplicates of *Coleoptera* and *Lepidoptera*, which had been prepared for the Industrial University, had not been returned to the academy, and therefore escaped the flames. I had also at my residence two large drawers of the original cabinet, containing the families *Staphylinidæ*, *Histeridæ*, *Nitidulidæ*, *Chrysomelidæ* and *Coccinellidæ*, making, in connection with the duplicates, something like a tenth part of the whole collection.

It will be observed that the pageing of this report is made continuous with that of the preceding one. The object of this is to facilitate indexing when a number of these reports shall be bound together in one volume.

I am indebted in this, as in the former report, to Mr. C. V. Riley, for the figures which illustrate it, with the exception of those of the two Willow insects, which were engraved by Baker & Co., of Chicago, and the bug-catching machine, at the end of the volume, which was engraved at the office of the *Prairie Farmer*.

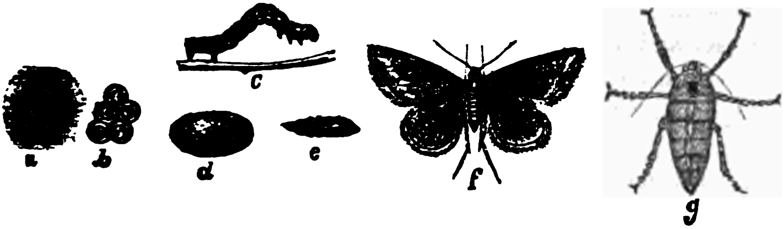
I have again to express my thanks to the managers of the leading railroads of the State for free passes over these great thoroughfares.

Respectfully submitted.

GENEVA, *December*, 1871.

WILLIAM LEBARON,
State Entomologist.

INSECTS INJURIOUS TO THE APPLE.



Explanation of figures.—*a*, the eggs; *b*, the eggs magnified; *c*, the Canker-worm or larva; *d*, the cocoon; *e*, the pupa; *f*, the male moth; *g*, the female.

THE CANKER-WORM.

(*Anisopteryx vernata*, Peck.)

Order of LEPIDOPTERA. Family of GEOMETRIDÆ.

Harris's Treatise, (Ed. 1862) page 461; Riley's 2d Rep., p. 94.

Amongst the many kinds of insects which are injurious to mankind a comparatively small number have been so extensively destructive, and have become so generally known, that they might be appropriately called, by way of distinction, first-class noxious insects.

In order to be entitled to this bad preëminence, an insect must possess a certain number and degree of obnoxious qualities. In the first place it must depredate upon some one of the more valuable productions of the soil upon which mankind depend for subsistence and profit. In the next place it must be sufficiently numerous to attract general notice, and to demand the most prompt and energetic measures for its suppression. And, thirdly, it must extend over a sufficient area of country to make itself felt, not only upon individual welfare, but also upon the commercial interests of the country.

Tried by these tests but very few of the many insects treated of in our Reports and Treatises upon noxious insects, can be admitted into this primary class; and of these some would enter without question, whilst the claim of others would be regarded as debatable. Amongst the insects which take this rank without doubt or question, may be mentioned the Hessian-fly, the Chinch-bug, the Oyster-shell Bark-louse, the Plum-curculio, the Codling-moth, the Colorado Potato-beetle, and lastly, the notorious Canker-worm, which is the subject of the present article.

Whilst it is important to examine, describe and name all the species of noxious insects, partly for the convenience of reference, and partly because we do not know how destructive any one of them may hereafter become, yet it is chiefly by the continued and repeated investigation of the most notorious and destructive species, and the record of every fact and experiment which may throw light upon their history and the most effective means of combatting them that the entomologist can expect to render an essential service to the farmer and the horticulturist.

With this end in view, having had a good opportunity to observe the Canker-worm and the moth which produces it, during the past season, I determined to submit the habits of this notorious and long known insect, to a renewed and careful scrutiny. I am in hopes that the observations and experiments here recorded will enable us hereafter to combat this destructive insect more successfully than we have heretofore done.

ITS HISTORY.

The Canker-worm is a native American species, and is one of the longest known of our noxious insects. The earliest record of its history that I have met with is printed upon a discolored scrap of an old book, the title of which is lost, which was sent to me by Mr. Jonathan Huggins, of Macoupin county. As the extract is brief and is worth preserving on account of its antiquity, I here transcribe it:

"CANKER-WORMS.—In the year 1789, the Rev. John Cushing, of the county of Worcester (Mass.), communicated to the Academy of Arts and Sciences, a method to destroy Canker-worms in the egg. It is as follows: In autumn, before the ground be frozen, take an iron bar and make a number of holes under each tree, near the body; thrown in a few kernels of corn into each; let in swine; and they will root the ground over and over, which will not only so disturb the eggs deposited in the ground as to destroy them, but it will be very salutary to the trees. Nothing is better to make apple-trees flourish than to have hogs turn up the ground under them.

"This method (added Mr. Cushing) I had from Mr. Edward Raymond, of Sterling, who has tried it with success."

The practical advice given in this extract is by no means devoid of value, but the writer has fallen into the error of mistaking the chrysalids of the insect for its eggs.

But, like other widely spread noxious insects, the Canker-worm has had its seasons of increase and decrease. It was very abundant in Massachusetts seventy years ago; subsequently it became almost unknown in that State for many years. It is said to have disappeared after a very heavy frost in the month of June which killed the caterpillars. But this is hardly probable of so hardy an insect as the Canker-worm. They appear to have been numerous in the vicinity of Boston in the year 1840, and several preceding years; but Dr. Harris states that from 1841 to 1847 they almost disappeared from that section, but that they rapidly increased again after the last mentioned date.

It is remarkable that several of our noxious insects which are most destitute of the means of locomotion, have become the most widely spread over the country. This is the case with the Oyster-shell Bark-louse, the White-spotted Tussock-moth, and the Canker-worm, in all of which the female is destitute of wings. The Canker-worm appears to have been first known as a noxious insect in New England, but it has now become spread over all the northern and western States, as far west as Iowa, and as far south as Missouri. I have received the past season, accounts of serious damage by them from Clinton, Wisconsin, and DuQuoin in the southern part of Illinois, and from several intermediate places. Reports of their injuries have also been communicated to the Department of Agriculture at Washington from Norfolk county, Massachusetts; from several counties in Ohio, and from Jefferson county in Iowa. In these communications they are sometimes designated as the Measuring-worm, and sometimes as the Black span-worm. But, as might be expected from the wingless character of the females, their distribution is very unequal and apparently arbitrary, a common road sometimes serving for years as a barrier between a free and an infested orchard.

DESCRIPTION.

The general appearance of this insect, in its several stages, is sufficiently obvious in the figures at the head of this article. They are of a pale gray color, and have no conspicuous markings. The wings of the male are of a very thin and flexible texture, and are usually seen more or less denuded of their scales. The females, as already stated, are wingless. They vary in length from two to five-tenths of an inch. Their gray color is produced by short black hairs and scales, on a whitish ground. The thorax is hoary, usually with a distinct transverse black line or narrow band. Some individuals have a distinct black dorsal stripe extending the length of the body, but this is usually interrupted, and often obsolete or wanting. Their general color is so similar to that of the bark of the apple tree that they are easily overlooked, when not in motion. The proboscis is obsolete in both sexes; and these insects take no food in their imago state.

THE NATURAL HISTORY

of these insects may be briefly stated as follows: The female deposits her eggs upon various trees, but mostly upon the apple-tree and the elm. These eggs hatch in the latter part of April or beginning of May, or at about the time of the flowering of the red currant—the time varying a week or two, according to latitude and the character of the season. The caterpillars feed upon the foliage, and are often so numerous as to defoliate whole orchards of apple-trees or whole parks of elms. They attain their full growth in about one month, when they let themselves down by a thread, and burrow from two to six inches into the ground. Here they assume the chrysalis state, and remain, with a few exceptions, through the winter and until the first mild weather of spring releases them, by removing the snow and frost from the surface. They immediately make their way to the nearest tree, and crawl up its trunk. The winged males are now seen fluttering about the wingless females, and, after pairing, the females deposit their eggs and perish, thus completing the circle of their existence.

RECORD OF 1871.

I will introduce the practical treatment of this subject by a condensed record of my observations upon this insect, during the spring and summer of 1871. Such records, if carefully made, often possess an intrinsic value, inasmuch as they present the actual facts and observations upon which the opinions of the author are founded, and from which others also can draw their own inferences, and we sometimes find it convenient to refer to them for purposes which the author did not contemplate.

In the summer of 1870 my attention was called to a small orchard of apple trees, within less than a mile from my residence, which had been stript of its leaves by some kind of caterpillar. Upon visiting it I found the trees nearly bare of foliage, but not an insect could be found. They had done their work of destruction and disappeared. I had no doubt that the Canker-worm had been the agent of the mischief, though I had never happened to have an opportunity to observe the habits of this insect where it prevailed to so large an extent.

The winter of 1870–71 was equable and mild. There was an unusual fall of snow for this section of the country, and the ground was not deeply frozen. The first week of March was remarkably warm, and the remnant of snow disappeared, except where it had been deeply drifted.

Calling the canker-worms to mind, I suspected that under these circumstances the moths would be moving early in the season.

March 7.—Upon visiting the infested orchard late in the afternoon, I found many of the male moths flying about the trunks of the trees and alighting upon them. Not a female was, as yet, to be seen. But upon looking amongst the dead grass and leaves at the foot of the trees, I found a considerable number of the wingless females, inactive and apparently torpid.

Remaining in the orchard till it began to get dark, I noticed a striking increase in the activity of the moths of both sexes. The females could now be seen emerging from their concealment, and crawling eagerly up the trunks of the nearest trees attended by, and often paired with, their fluttering mates. Visiting the orchard again the same evening after nine o'clock, with a lantern, I found the moths still traveling up the trunks of the trees and out upon the larger branches, but there did not seem to be that universal and restless activity which prevailed earlier in the evening. From this and subsequent observations, I conclude that those insects are crepuscular in their habits, rather than strictly nocturnal.

March 8.—Visited the orchard in the forenoon. Only here and there a solitary moth could be seen. But upon looking under the dead leaves and grass around the foot of the trees, and under the loose bark on the trunk and larger branches, the insects of both sexes, but especially the wingless females, were found, often crowded together torpid and motionless, and waiting for the return of night to resume their activity. Fifteen or twenty insects could be sometimes counted under one of the larger scales.

March 9.—Yesterday afternoon there occurred a violent thunderstorm with occasional heavy showers, which settled into a steady rain in the evening, and continued till near midnight. It grew cold in the night, and to-day there has been a sprinkling of snow. I was curious to see how so sudden and severe a change of the weather had affected the Canker-worm moths, especially as most of them were not so protected, but that they must have been frequently drenched with cold rain. I could not find that any of them were seriously damaged, but only rendered a little more torpid for the time being.

March 10.—Rather cold and windy. Mercury at 45°. Visited the orchard and remained till after six o'clock in the evening. Very few moths moving; examined the ends of the lower branches of several trees, but did not see more than a dozen moths in all, and these had uniformly stationed themselves in the little crotches formed by the forks of the smaller branches or twigs.

March 11.—Caught a male flying near my house more than half a mile from the infested orchard, just before dark. Evening calm, mercury at 40°. Visited the orchard after dark with a lantern, and found the trees quite animated again with the ascending moths, many of them in pairs. Many were now seen making their way out upon the limbs of the trees, but seemed generally to stop short of the small branches.

March 13.—Examined the infested trees with the special view of determining where the eggs are deposited. Found many clusters of eggs attached to the under side of loose scales of bark on the trunk and branches; never close to the ground; sometimes, but rarely, only a few inches above it, but becoming more numerous towards the upper part of the trunk, and still more so upon the large branches. Found no eggs on the smooth branches or twigs, except where some accidental protection could be obtained. I detected some of the eggs concealed in the tufts of dead leaves produced by the Leaf-crumpler or larva of the *Phycita nebulo;* and upon further examination found that in almost every instance these tufts had been made use of by the Canker-worm moth as a depository for her eggs. In some cases the open ends of the last year's cones were found crammed full of eggs.

At this date I commenced a series of experiments with the view of preventing the ascent of the female moths, by putting around the trees bands of hay, rope and tin, which will be described more fully in the sequel.

March 15.—Very warm and showery. Mercury at 70°. Went out to the orchard just as it was getting dark and remained over an hour. I had never seen the moths so abundant. The trunks of the trees were alive with thousands of ascending moths. Indeed, the ascent of the Canker-worm moths, at the hight of their season, in a badly infested orchard, presents a most curious and animated spectacle. As evening approaches a few straggling moths may be seen issuing from the dead grass around the foot of the tree, or from under the scales of bark where they have found shelter during the day. But as the darkness deepens the activity becomes general, and soon the trunks of the trees become alive with the multitudes of ascending moths of both sexes; the wingless females eagerly making their way up the trunk, attended by flocks of the winged males. Sometimes a female will be wholly hidden from sight under two or three superincumbent males, and her presence is only known by the steady upward progress of the fluttering mass, as she presses onward up the steep ascent, though burthened within and encumbered without, scarcely pausing for love's dalliance by the way, but dragging her partner along with her, urged by an irresistible impulse toward the accomplishment of the one grand purpose of her being: the deposition of the germs of her future progeny on the branches above, where her young, as soon as they are hatched, will be in the midst of their appropriate food.

March 16.—Weather much changed; but little above freezing; raw and misty. Examined the moths at dark, but only one here and there could be seen moving.

March 17.—Evening clear and cool. Mercury at 44°. Moths moving in considerable numbers, and upon those trees where bands of tin and hay had been put around the trunks, many moths were found congregated below the obstructions.

March 25.—Since the last date the weather has been very cold for the season, freezing at night and moderating but little by day. I have visited the orchard but once, and that in the day time. This evening, the weather having moderated, mercury at 43°, cloudy, wind east, I went out to the infested orchard an hour after dark. Moths still running, but noticed mostly below the obstructing bands.

April 7.—Weather since last date rather cold for the season. I have examined the moths a few times, but no observations of importance have been made. To-day has been very warm, mercury up to 80°; visited the orchard an hour after dark; counted thirty moths on one tree below the band; examined other trees upon which there was no obstruction. Upon only one of them a few moths were found moving, just enough to show that some stragglers continue to ascend the trees as late as the first week of April.

NUMBER OF EGGS AND PLACE OF DEPOSIT.

The female Canker-worm moths differ much in size, varying as we have stated from two to five-tenths of an inch in length, and the number of eggs laid by each individual varies accordingly. I have found in the smallest moths only fifteen or twenty eggs, whilst the largest contain from one hundred and forty to one hundred and fifty.

As the season for laying the eggs is now past, I have made a number of examinations with the view of determining definitely where the eggs are deposited. Whilst the moth of the Tent-caterpillar covers her eggs with a water proof varnish and deposits them on the exposed twigs, the Canker-worm moth does not so protect her eggs, and only secretes enough of a glutinous fluid to stick the eggs to the bark. She therefore always seeks some other protection, and this is furnished almost exclusively by the loose scales of bark. In accordance with this statement no eggs are found on the twigs or the small smooth branches. Dr. Harris states that the eggs are deposited "in the forks of the small branches, or close to the young twigs and buds." But I must conclude that Dr. Harris did not make this statement from his own observation. I have recorded above that in cold or stormy weather the female moth, after she has ascended the tree, and passed out upon the branches, often seeks the slight and only available shelter afforded by the forks of the twigs, and it was natural to expect that she would deposit her eggs there. But if she ever so deposits them, it must be very rarely and exceptionably. After a diligent search with the aid of a lens on several different occasions, upon heavily infested trees, I have never succeeded in finding any of the eggs in this situation, nor elsewhere than under the scales of bark, with the solitary exception, above referred to, of the protection afforded by the crumpled leaves and cones of the *Phycita nebulo.**

A corroboration of this view is furnished by a remark of my correspondent, Mr. J. Tinker of Wisconsin, who, speaking of these insects which have been very destructive upon his place, incidentally remarks "They do not bother small, smooth barked trees, either in the nurser or orchard." I may here add that, in a subsequent letter, Mr. Tinke stated that he had found the eggs of this insect in the dried apple which had adhered to the tree through the winter.

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* An interesting instance of this habit of the Canker-worm moth was communicated to by Mr. Elmer Baldwin. He stated that at one time his orchard became infested by these i sects, and that at the same time the Leaf-crumplers were very numerous and troublesome, a that the moths availed themselves of the shelter thus afforded for the deposition of their egg to such an extent, that he regarded it as one of his most efficient modes of getting rid of Canker-worms, to gather and destroy the crumpled nests of the *Phycita*—thus destroying t noxious insects by the same operation.

I have already referred to the fact that the moths deposit their eggs almost exclusively upon the inner surface of the loose scales of bark, and not upon the body of the tree. Why they should always attach their eggs to the dead bark over them, rather than to the smooth living bark under them, it is difficult to conjecture, but that they do so puts them, to a great extent, at our mercy. For it is evident that by scraping off the dead bark on the trunk and branches, any time between the laying and the hatching of the eggs, so large a proportion of the eggs will be destroyed that the comparatively few which may escape will not be numerous enough to effect any serious amount of damage. The bark and eggs thus scraped off should always be caught upon a sheet or a number of newspapers, and burned.

RECORD CONTINUED.—TIME OF HATCHING.

April 27.—About a week ago I saw a few young Canker-worms on the trees, but they were evidently premature stragglers, as the foliage had then scarcely begun to open. But to-day, the red currant being in pretty full bloom, and the leaves on some of the apple trees being half expanded, I found almost every tuft of leaves which I examined occupied by two or three minute Canker-worms.

May 11.—Canker-worms not injured by frost. The first part of May, since the Canker-worms hatched, has been cold and rainy, and on Friday the fifth, there was a sprinkling of snow, and water froze at night.

Visited the Canker-worms to-day and found them in good condition. The cold weather had, at most, only checked their growth a little. The worms vary much in size, implying that the eggs do not all hatch at once. Many of them are now three-tenths of an inch long. Noticed the ease with which they are jarred from the trees. A slight rap upon a branch will let off a shower of them, all hanging by their threads. I tried the plan of sweeping them away by passing a pole horizontally under the tree. It is evident that a vast number of them can be swept off in this way, and could be destroyed by having a brush fire at some one or more convenient points, over which the pole could be held for a few minutes.

APPROPRIATENESS OF NAME.

May 23.—Whilst looking at the apple trees blasted by this insect, I was struck with the appropriateness of their popular name of Canker-worm. By eating numerous irregular holes through the leaves, they interrupt the flow of sap, so that the leaf becomes withered and brown before it is wholly eaten, and the tree presents the appearance of having been scortched by fire.

MODE OF MIGRATING.

May 24.—Most of the worms nearly full grown, but others only half grown. Many worms are leaving the defoliated trees by hanging down upon their threads and trusting to the wind to swing them on to the neighboring trees. When the wind blows freshly, the worms are carried off nearly horizontally to a distance of many feet. I saw some to-day floating thirty feet from the tree. As the web by which they are suspended is scarcely visible, the worms often have the appearance of flying in the air. At the same time I could find very few worms on the trunk, showing that their normal way of migrating is not by crawling down the tree but by floating off on threads.

DIURNAL IN THEIR HABITS.

Whilst the parent moths are noctural or crepuscular, the larvæ are diurnal in their habits. They are seen feeding and migrating by day, and, having put twenty or more of them in a breeding cage, and examined them for a succession of nights, I always found them stationary on the leaves, and often standing off in horizontal or grotesque attitudes.

PRACTICAL TREATMENT.

I will now give a condensed statement of a series of experiments which I instituted, with the view of accomplishing the end so long sought for in combatting this insect, namely: the preventing the female moths from ascending the tree. As these females are destitute of wings, they cannot, like most other insects, fly upon the trees, but are under the necessity of crawling up the trunk, in order to deposit their eggs upon the branches above. To prevent her so doing has been the study of gardeners, fruit growers and amateurs for the greater part of a century, and yet no contrivance and no application, at once simple, cheap and effective, has ever been suggested. In the struggle for existence between man and the Canker-worm, the latter has thus far come off victorious. Many expedients have been resorted to. A leaden trough fitted around the trunk, and filled with oil, has been found the most effective, and might be used to preserve a few choice trees; but it requires considerable attention to keep it in order, and it is altogether too expensive for general use. The most common and generally approved method has been the application of a band of cloth around the tree, besmeared with some adhesive substance, which will entangle the feet of the ascending moths and hold them captive. For this purpose tar has generally been used as most available and effective. But this method is very troublesome and unsatisfactory, when attempted to be used upon any considerable scale. The tar dries rapidly in the air, and has to be renewed as often as every other day; and when we consider that the moths sometimes commence running in the fall, and continue to do so on mild days in winter and all through the month of March, we can see that the remedy demands too much time and attention to be practiced in large orchards.

Mr. Walsh, in an article upon this subject in the "Practical Entomologist," assuming that, in order to make this remedy successful, it may be necessary to renew the tar every day from the last of October to the middle of May, with the exception of cold days in the dead of winter, so as to intercept not only the moths but also the young caterpillars that might hatch below the obstruction, goes into a calculation to show that, even at this rate, it would pay the cost, if by so doing we can save our crop of apples. I do not question his calculation as a matter of dollars and cents, but it is utterly useless, as a general principle, to recommend remedies against noxious insects which will require daily thought and attention for six months in the year, or any considerable fraction of that period. Abundant experience shows that people in general will not persevere in fighting noxious insects if the contest requires any considerable expenditure of time, thought or money. Many of them will sooner adopt the heroic treatment formerly recommended by the editor of the "New England Farmer" to the Michigan State Agricultural Society, namely: to cut down the infested trees for firewood, or leave them to die a natural death, and turn their attention to some less troublesome means of procuring a livelihood.

At about the time of commencing my observations upon the Canker-worm moth, in the spring, I received a letter from Mr. John Tinker, of Clinton, Wisconsin, to whom I have before had occasion to refer, asking for information how to fight the Canker-worm. I immediately entered into a correspondence with him, and derived some interesting information, drawn from his extensive experience with this destructive insect. Mr. Tinker states that apple-trees will perish after having been defoliated three years in succession. With respect to the orchard in which I have made my observations, I have learned that the Canker-worms first made their appearance in it four years ago, and now some of the trees are dead and others are in a dying condition. Mr. Tinker went extensively into the tarring process, and, at my suggestion, used a mixture of molasses with the tar, which he found would spread easier and retain its fluidity longer.

Mr. Tinker continues: "On account of the coldness of the weather I have had to set a tin of tar mixture in a pail, and fill the space with hot water, to make it fluid, so as to apply it with an old paint brush. My man and I run off one thousand trees this afternoon, in four hours —second coat. The first coat takes longer. Amount of material used for one thousand trees, averaging six inches in diameter, from three to four gallons. The first coat takes about five gallons."

In a former letter Mr. Tinker says: "Your letters of the 7th and 9th are received. I got my tar on the 9th, and have been into the tar and moths knee-deep since; have caught enough already to fence the farm, but whether I shall succeed in catching the rest remains to be seen. I have observed the same as you have: that they run at night, even with the thermometer at eight degrees below freezing." I have not myself had an opportunity to see them moving at so low a temperature, but the above record shows that they will run on quite cold nights, provided it be not stormy.

Later in the year, after the Canker-worm season was past, I wrote to Mr. Tinker, inquiring the result of his experiments with tar. The following extract give the substance of his reply: "My efforts held the Canker-worms somewhat in check, still they stripped a good many trees; but they left so early, and the trees growing fast, they have had a good growth of wood since. But the tar must be put on every afternoon, and the moths run this year nearly a month." He adds, substantially, that unless some plan can be invented that requires less labor and looking after, he is satisfied that human effort will not exterminate them.

Other substances, which do not harden so rapidly, have been tried as substitutes for tar. Some have used melted India rubber, and printers' ink has been recently recommended in the "Boston Journal of Chemistry." But the practical objection to all such applications is, that they have to be kept fresh not only through the whole month of March and a part of April, but also in open weather, in the late fall and winter. And Mr. Tinker's experience, like that of thousands who have preceded him, shows that such remedies are at best but partial and unsatisfactory.

It having been noticed that the Canker-worm moths climb with difficulty over a hard smooth surface, attempts have been made to intercept their progress by surrounding the trunks of the trees with strips of glass and bands of polished tin. I have repeated these experiments and find them, like many of the other methods that have been resorted to, a partial but not complete preventive. If a moth be placed upon her back on a piece of glass, she cannot get sufficient foot-hold to turn over, and I experimented for some time with them before I saw any of them succeed in crawling up a perpendicular glass surface. But I found that they can do so, though with difficulty, and they sometimes drop off in the attempt. They adhere to smooth surfaces in the same way that the house-fly does, that is, by means of a little adhesive pad (*plantula*,) situated between the claws at the extremity of the feet, but with this difference, that the moth has but one pad to each foot, and the fly has two, and the brush of hairs upon the under side of the pad is more dense in the fly.

In the course of my experiments I made the following observations, which seem to furnish the key to a practically complete control of this notorious insect. I first tried the experiment of putting round the trunk of one of the infested trees a plain tin band four inches wide. The result is thus recorded in my diary:

March 13.—Went out at eight o'clock with a lantern to see how the experiment worked. Mercury at 34°. The moths were ascending in considerable numbers. There was a dense crowd of moths all around the tree just below the tin band. A considerable number had crawled on to it, but most of these seemed to be merely holding on without much disposition to pass over it. They were evidently baulked in their instincts. I occasionally saw one drop to the ground. A very small proportion had traveled over on to the tree above.

March 15.—Very warm. Moths very abundant, as recorded above. Tried the experiment of putting another tin band outside of the first, with a piece of inch rope between them so as to close the passage. The moths came up in crowds, but did not accumulate between the bands as I had expected, but below the inner one, as in the former experiment. It appears, therefore, that if a plain tin band, four inches wide, be put round the trunk of a tree, the moths will congregate below it, but will not freely go on to or over it. A small proportion go over, and seem to do it without any great degree of difficulty. That they do not more readily and more generally pass over, can only be explained upon the supposition that the insects are baulked or disconcerted. They find on the polished surface none of the shelter which their instincts teach them to seek for their eggs, and they are at a loss what course to take. When the instinct which impels the wingless mother of the Canker worms to make her way up the tree with such untiring zeal and pertinacity, was inscribed in the great book of Nature, the intervention of a polished tin band was not in the programme.

The moths congregrated in such numbers, one upon another, that at some points they were nearly or quite upon a level with the outer band, and the outside ones passed on to it. Upon reaching its upper edge, if the rope filling were on a level with it, they would pass over on to the tree above; but if the rope happened to be below the top of the bands, the insects would not attempt to crawl down so as to reach the rope, but would go round the edge till they came to a place where it was up to the level and then pass over. This suggested the idea that if the upper edge of the tin band were made to stand out free all around, the insects would probably be completely baulked in their ascending instincts. As the free upper edge of the outer band was the essential part of this experiment, I simplified the operation by omitting the inner band, and putting a single tin band outside of the rope band and placing it so that the rope should be about midway between its upper and lower edges. This simple contrivance seemed to be successful for all practical purposes. Comparatively few moths got on to the outside of the band, and these, upon arriving at its upper edge, and being unable to go higher, kept traveling round and round the edge until they became discouraged.

This simple method of placing a single tin band over a band of rope was adopted on the 15th of March, and though the moths continued to run in diminishing numbers all through the remainder of the month, yet only a single moth is recorded in my diary as having been seen above the band after this date.

The next practical question that arises is: what course will these egg-laden moths take if prevented from ascending the tree above a certain circle. My observations show that they will not return and deposit their eggs amongst the dead grass and leaves around the foot of the tree, as I had apprehended, nor even upon the lowermost part of the trunk; but that, faithful to their instinct, they will deposit their eggs as high up as they can get. Accordingly, I found the under side of the rope densely sprinkled with eggs, and the bark of the tree, for several inches below, almost covered by them, in many places piled upon each other. If there be loose scales of bark at hand, they will crowd the spaces beneath them with eggs, and when these fail they will adopt the only alternative the emergency admits of, and lay their eggs upon the exposed surface, though at the time they are deposited the crowded bodies of their companions must furnish a temporary shelter.

If the simple apparatus above described proves as effectual, upon further trial, as it has in my experiments, and if the intercepted moths or the great majority of them, deposit their eggs within the space of a few inches below the obstruction, then we shall have narrowed down the practical treatment of the Canker-worm to a very small circle. The only remaining necessity will be to dispose of the eggs in such a manner that they shall not hatch, or that the worms proceeding from them shall not ascend the tree. I have proved, by experiment, the truth of what has been stated by others, that polished surfaces, such as tin and glass, furnish no obstacle to the ascent of the young worms. They walk with the utmost ease up a plate of glass, its smoothness being, in their case, simply equivalent to the absence of obstructions.

The quickest and surest remedy, therefore, is to destroy the vitality of the eggs. It has been found that the eggs of insects will often withstand much stronger applications than the insects themselves, and I have found that the eggs of the Canker worm moth may be smeared with soft-soap, or wet with a strong infusion of Paris green, without losing their vitality. But the least touch of kerosene oil is invariably fatal to them. By removing the bands, immersing the pieces of rope in boiling water, and applying kerosene to the trunk for a few inches below the band, the greater part of the eggs will be destroyed. To make the work more thorough, it will be necessary to apply the kerosene over the greater part of the trunk between the band and the ground, as some eggs are found under the bark nearly down to the ground; and this suggests the propriety of putting the band as low down as convenient, so as to circumscribe as much as possible the space to which the oil is to be applied.

But it will be asked: Will not the direct application of the kerosene injure the tree?

It seems to be generally supposed that certain strong and pungent substances cannot be applied to the bark of trees without injury. Accordingly we find that it has been the common practice in applying tar, especially the coal tar, to the trunks of apple trees, for the purpose of preventing the ascent of the Canker worm moths, to first surround the trunk with a band of coarse cloth, upon which the tar may be received. As it appeared from my experiment, that the strong applications usually made use of to destroy insects, fail to destroy the vitality of the Canker-worm eggs, whilst the least touch of kerosene is fatal to them, it became desirable to test this matter, and determine whether the direc application of kerosene oil to the trunk and branches is injurious to the tree.

For this purpose, the following experiments were performed:

On the 30th of March, before the buds had expanded, I selected two thrifty, five-year old apple trees and anointed them all over, twigs and all, with kerosene oil.

On May 9th, after the foilage had expanded, I anointed the trunk and large branches of another tree, leaving the smaller branches and foilage untouched.

On the 13th of May, with the view of making the test more general, I scraped off the rough outer bark from the trunks of a number of forest trees, three or four inches in diameter, for a space of about two feet, and thoroughly anointed them with kerosene. The trees experimented with were a white oak, a hickory, an iron wood, a thorn, and a crab apple. I examined these trees at various times in the summer and fall, and could not find that any permanent injury had been inflicted upon them. In the case of the two young apple trees which were anointed all over, the first crop of buds were either killed or checked in their development, and these trees were several weeks later than others in leafing out. But later in the season (July 5th) these trees appeared as healthy and their foliage as full as any others.

In connection with these experiments, similar ones were made with simply greasy substances, such as lard and linseed oil, with equally harmless results.

The application of coal tar to the trunks of young trees, however, has resulted much more disastrously. Mr. Jonathan Sells, of Bloomington, imformed me that having seen it stated in an agricultural paper that the application of coal tar to the trunks of apple trees would keep off rabbits, he applied it to a space of six or eight inches high, at the bottom of the trunks of sixty apple trees, six years old from the graft, and every tree was killed and subsequently dug up.

How can we explain the difference in these two results? Was it that the coal tar is so much the more powerful and injurious in its effects, or was it due to the difference in the time of the year when the applications were made?

I wrote with reference to this point to my friend, Mr. Tinker, whose large experience in these matters renders his opinion of much value, and in his reply, under date of September 12, he says: "I have seen young trees injured by coal tar, put on in the winter to keep off rabbits, but I think any thing will injure a tree more, put on when the sap is dormant, than when growing." He adds that he has found pine far entirely harmless, but that it dries so rapidly that it requires to be renewed every day.

With regard to the particular point now under consideration, however, namely: the application of kerosene oil to the trunks of trees for the purpose of destroying the eggs of the Canker-worm moth, my own experiments, above detailed, seem to show conclusively that it is entirely harmless, at least, in the spring of the year; and this is the time when it is to be applied for this purpose. But a reasonable caution as to the extent of its application should be exercised, until tested by further experience.

NATURAL ENEMIES.

These insects have been observed to be destroyed by birds, by a number of predaceous ground beetles, and by several species of parasitic flies. My own observations upon this branch of the subject have been very limited, and mostly of a negative character. I have seen no natural enemies preying upon them to any appreciable extent. I have seen black ants carrying Canker-worms down the trunks of the trees, sometimes larger than their own bodies, but only in occasional instances.

I have also seen, under the same scales with the eggs, large numbers of a sub-globular smooth, brownish-black *acarus* or mite. This is similar to, and perhaps indentical with, the species referred to by Dr. Packard under the name of *Nothrus ovivorus*, and which he says he has seen sucking the eggs of the Canker-worm. My correspondent, Mr. Tinker, also called my attention to them, and said he suspected that they destroyed the eggs, as he had observed some of these to be shrunken where the mites were present. I have repeatedly examined these acari, but have never detected them in the act of sucking the eggs. I have also kept quantities of eggs and acari shut up together in a box for days, but in due time the eggs nearly or quite all hatched. I have also found the same acari in equal numbers under bark where there were no Canker-worms. My own observations, therefore, do not lead me to attach much importance to them as Canker-worm destroyers.

SUMMARY OF REMEDIES.

The following remedies against this insect are given in the order in which they are to be applied, commencing with the appearance of the moths in the spring.

1st. Prevent the passage of the moths up the trees. The most approved plan heretofore used, is to put a canvass or other cloth band, six inches or more wide, around the trunk and besmear it with tar, or a mixture of tar and molasses, applied every other day. Roofing felt besmeared with refuse printers' ink has been recently suggested as preferable. The method suggested in this Report is, to put a band of rope or closely twisted hay around the trunk, and over this a tin band about four inches wide, placed so that the rope shall be at the middle of the tin, making a closed cavity below and a free edge of the tin above. The time to use these appliances is, mostly, in the month of March; but also at other times when the weather is sufficiently open to permit the insects to run.

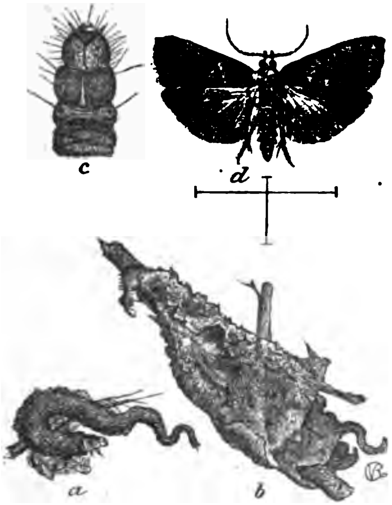
2d. If the moths are prevented from ascending the tree they will deposit their eggs below the obstruction, and for the most part near to it. These eggs can be destroyed by a single application of kerosene oil.

3d. If the moths are not prevented from ascending the tree they will deposit their eggs mostly upon the under side of the loose scales of bark on the upper part of the trunk and the large branches. Many of these can be destroyed by scraping off and burning the scales.

4th. If all precautions have been neglected, and the eggs have been permitted to hatch, then, as soon as the worms are large enough to be easily seen, jar them from the trees and sweep them away with a pole, as they hang by their threads, and burn or otherwise destroy them. Strong washes, such as Paris green water, or suds made from the whale oil soap, thrown upon the trees with a garden syringe, will also materially check their depredations.

5th. If the worms have matured and gone into the ground for winter quarters, plow the ground late in the fall, so as to expose the pupæ to frost and the action of natural enemies. The effectiveness of the plowing will be increased if a few handfuls of corn be plowed in under each tree, and the hogs be permitted to have the range of the orchard.

The method of putting on the tin and rope bands mentioned in the first paragraph is very simple. Take a piece of inch rope—old worn out rope is just as good as new—tack one end to the trunk, two feet or less from the ground, with a shingle nail, driven in so that the head shall not project beyond the level of the rope; bring the rope round the tree and let it lap by the beginning an inch or two; cut it off, and fasten it in the same manner. Get the tin-man to cut up some sheets of tin into strips four inches wide, and fasten them together end-wise, so that they shall be long enough to go round the trees over the rope band, having the rope at the middle. Let the ends of the tin lap a little, punch a whole through them and fasten them with a nail driven through the tin and rope into the tree.



Explanation of the figures.—*a*, the worm in its twisted case; *b*, a crumpled mass of leaves containing a number of worms; *c*, the anterior part of the worm or larva, magnified; *d*, the perfect or winged insect.

THE APPLE AND WALNUT LEAF-CRUMPLERS.

(*Phycita nebulo, and Phycita juglandis.*)

Order of LEPIDOPTERA. Family of TINEIDÆ.

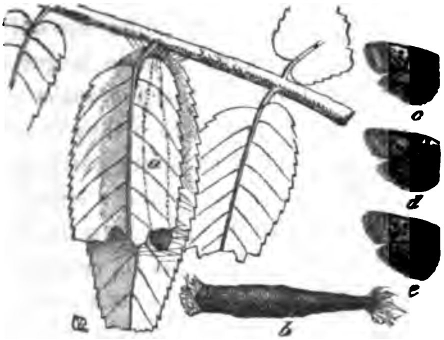
As the second of the above-named insects is of a scientific rather than a practical interest, we have not thought it worth while to make it the subject of a separate article, but to treat of it in connection with its congener, the well-known Leaf-crumpler of the apple-tree. We have been confirmed in this course, we will not say by the opinion, but rather by the suspicion that these insects may ultimately prove to be only plant-varieties, or, to use Mr. Walsh's more expressive term, *phytophagic* varieties of one and the same species But this point we shall treat of more fully in the sequel.

Phycita nebulo is the scientific name of the little gray moth whose larva forms those tufts of dead crumpled leaves which adhere to the twigs of apple and plum trees all winter, and with which every orchardist is familiar. The first account of this insect was written by the author of the present Report, and published in the September number of the "Prairie Farmer" for the year 1853. As this account gives a brief and comprehensive outline of this insect's history, we here reproduce it:

> "The Apple-Tree and Plum-Tree Leaf-Crumpler.—This insect passes the winter in a half-grown larva state, and is rendered very conspicuous at this season by the little clusters of dried leaves attached to the twigs of the apple and plum-trees in which the larvæ lie concealed, sometimes singly, but often two or three in company. Besides the covering of dead leaves, each larva is enclosed in an elongated, conical and somewhat twisted case, rough externally, but of fine texture and polished surface within. As soon as the foliage expands in the spring, the caterpillar begins to devour the leaves in its immediate vicinity, drawing them in around itself, and confining them there by threads of web. It is thus enabled to feed at ease, by protruding its body partially from the larger and open extremity of its case. The larva arrives at maturity about the end of June. It is then about two-thirds of an inch long, sixteen-footed, pale dull green, with a brown head. It now slightly closes the mouth of its case, and changes into the chrysalis state. Before the middle of July the perfect insects begin to make their appearance in the form of small gray moths belonging to the family Tineidæ. The antennæ setaceous and simple; labial palpi long and recurved; maxillary palpi short and distinct; wings narrow and applied to the sides of the body when at rest; length four and a half lines, or less than half an inch; color light gray, slightly varied above with brown; across the end of the wings are three oblique blackish lines, the terminal one consisting of a series of black points."

Subsequently, in May, 1860, Mr. Walsh, not having noticed this account, published in the same journal another sketch of this insect, accompanied with an imperfect figure, and for the first time gave the species the scientific name which it now bears.

Mr. Walsh designated this insect by the popular name of the "rascally leaf-crumpler," and to another insect which he described he applied the epithet of "the hateful grasshopper." Such terms cannot meet with general approval. However injurious or obnoxious some insects may be to us, the application to them of epithets indicative of rascality or malignity is incorrect, and repugnant to good taste. The term *bogus*, also, applied to certain insects because persons ignorant of entomology have mistaken them for other and more notorious species, is equally objectionable. The specific term *nebulo* means the same thing as the English cognomen, but being couched in one of the dead languages, it is perhaps admissible, more especially as it certainly possesses the merit of euphony.



Explanation.—*a*, the larva in its case suspended between two leaves; the dotted lines show the position of the case behind the leaf; *b*, the case seen separately; *c*, the wings of *Phycita nebulo*; *d*, wings of *Phycita juglandis*; *e*, wings of a variety of *P. nebulo* bred on the crab-apple.

Phycita Juglandis, *N. Sp.*

The insect to which I have given the specific name of *juglandis*, lives in its larva state upon the hickory and black-walnut. The principal interest that attaches to it lies in its close relationship to the species just described, involving the curious question of identity of species, under diversity, not only of the coloration of the imago, but also of the food-plant and habits of the larva.

The moth is a much plainer insect than the apple-tree species; for whilst the latter, though tinted with subdued colors, is rather prettily variegated, the walnut species is a plain cinereous or ash-gray moth, with its markings so obscure and obsolete that, in most individuals, they can scarcely be detected. I have before me at the present moment five specimens of the *Phycita nebulo*, and fifteen of the *P. juglandis*, twelve of which I bred from larvæ taken from the black-walnut, and three are from the Walsh cabinet, marked as having been obtained from the hickory. These last have their markings rather more distinct than those from the black-walnut, but much less so than those of the genuine *nebulo*. If we compare the *P. nebulo* with the average specimens of the *P. juglandis*, their specific identity could scarcely be suspected. But if we take the best developed specimens of the latter, and select the most characteristic marks of each of them, we can make up an imaginary individual which would present a considerable similarity of pattern to that of the genuine *P. nebulo*.

But it is in the habits of the larvæ, and the form and mode of attachment of its case, that the most striking differences are observed.

The larvæ themselves are small, almost naked or hairless worms, and bear a close resemblance to each other, differing only slightly in size and color; those of the *nebulo* being a little larger and usually of a reddish-brown color, while those of the *juglandis* often incline to a dull green. They both inhabit cases which they construct of web, into which is compactly woven the little hard, dry particles of their castings. The cone of the *nebulo* is of a brown color, a spiral or twisted form, and is often attached by its whole broad side to the twig. That of the *juglandis* is of a slate-black color and more compact structure; of a straight form, and invariably suspended by its smaller extremity. The cases of the *nebulo* are sometimes attached directly to the twig, lying around it in a spiral form, but they are usually found in companies, or two or three in a clump of crumpled and partially eaten leaves; but in this case they take the precaution to anchor their cones by a strong silken cable to the permanent twig from which the leaves proceed.

The habits of the larva of the black-walnut species is in striking contrast with this. As soon as the leaves are about half grown, in the spring, it leaves the twig to which it has been attached through the winter, and passes out upon the central or common leaf-stalk of the long pinnate leaves of the black-walnut, usually to about the middle of its length, and suspends its case invariably between the bases of two opposite leaflets, and these it draws down and ties together so as to form a kind of roof above it. Upon these leaves it feeds, always commencing with the tips, so as not to disturb the connection of the leaf with the stalk. I have seen at least a hundred of these larvæ in their cases, but never saw but one on the same leaf.

It is an unsettled question whether the larva takes its case with it, when it migrates, or leaves it and constructs a new one. Mr. Walsh speaks of the larva of *P. nebulo*, as traveling from limb to limb, and carrying its case with it. But he gives no details, and leaves it doubtful whether he had actually seen the insect so migrating, or only inferred that it did so. It is the instinct of these insects to tie their cases securely to the tree, and they could not move them from place to place without an elaborate separation; and that they are capable of constructing a new cone, I have repeatedly proved in the case of the larvæ of the *P. juglandis*, by taking them from their cones and placing them naked upon another leaf. In the course of twenty-four hours they were usually found to have constructed or commenced, at least, a new cone, locating it in the ordinary position, at the junction of two opposite leaflets.

NATURAL AND ARTIFICIAL REMEDIES.

The *Phycita nebulo* may be called a troublesome, rather than a very noxious insect. They always render the trees unsightly by the tufts of crumpled leaves which they tie together and partially devour; and they sometimes multiply so as to considerably damage young trees. If they are unusually numerous they can be checked, to some extent, by throwing air-slaked lime, soap suds, or Paris green water upon the trees; not by any direct injury to them, for they are so protected, both by their cases and the crumpled leaves, that such applications could scarcely reach them—but by rendering the foliage distasteful or poisonous to them. But the true remedy is to pick off the crumpled leaves, with the inclosed larvæ, in the winter or early spring, at which times they form conspicuous objects upon the leafless trees.

In a recent article upon this insect, in the "Prairie Farmer," by Mr. B. D. Wier, a very good suggestion is made, namely: that the crumpled leaves and the inclosed worms should not be burned or otherwise destroyed, but that they should be taken to some distance from the fruit trees which they are known to infest, and there left unharmed. The result will be that the worms will starve, whilst the useful parasites will be permitted to escape.

As a general rule, however, they may be safely left to the operation of natural agencies. Both birds and parasitic insects prey upon them to a very considerable extent. Mr. Walsh reared a species of *Tachina* from them, but said he had detected no parasitic Ichneumon-fly infesting them. Last winter Mr. B. D. Wier sent me some of the cones of this insect infested by small white worms, which were evidently the larvæ of some *Hymenopterous* insect; and in the summer following, from about two dozen cones, I obtained but three moths (July 7th, 12th and 16th). The rest were destroyed by parasites, of which I obtained two Ichneumon-flies of the same species, upward of a dozen individuals of a minute Chalcis-fly, and three specimens of a small species of *Tachina*. So that, notwithstanding their natural protections, they appear to have their full share of parasitic enemies.

Winter birds also feed upon them. Mr. A. R. Whitney, of Franklin Grove, stated to me that these insects have been much less numerous in his nursery of late years than formerly. He said that he had often seen quails jump two feet and upwards from the ground and seize the crumpled leaves in which these worms were concealed, and that he had seen numbers of these tufts scattered upon the ground between the nursery rows, from which the insects had been pecked by these birds. Mr. Whitney further remarked that he had noticed that a considerable fall of snow would give the quails a vantage ground which enabled them to obtain those worms which were, ordinarily, above their reach.

With respect to the parasites of the *P. juglandis*, I may here state that I have bred from their cones two distinct species of Ichneumon-fly, one of which was different from the species obtained from the *Phycita nebulo*.

THE QUESTION OF SPECIFIC IDENTITY.

Whether the insects here described (and the question applies equally to many other similar cases), be distinct species, or only plant varieties of the same, is at present merely a matter of conjecture, or of personal opinion. The question could be definitely settled only by a series of experiments, extending through a long period of time, in which the insects should be changed from one kind of plant-food to the other, and notice taken whether there were a gradual tendency to those variations which we now see to exist.

The whole subject of the variation of species according to difference of location, food, and other circumstances, is one which is attracting much attention amongst naturalists at the present day. It involves the important question whether there really be in nature any such thing as species, in the ordinary acceptation of that term ; that is, whether there be any definite and permanent forms which have existed in the indefinite past, subject, as a general rule, only to slight variation, and always tending to return to the original and normal type ; or whether what we call species are only varieties of a comparatively more permanent form, and this permanency owing simply to the force of circumstances, and not to any inherent law of their being.

The subject is also of interest as having an important bearing upon what has been heretofore known as the development theory, but which is at present more commonly called the Darwinian theory, after the name of its most able and popular expounder. Every well-attested fact which shows the gradual and constant change of organized forms, tends to open the way for a more general reception of this theory, by showing that our pre-conceived notions of the original creation of species, essentially in the forms in which they now exist, cannot be maintained. But this is not the place to discuss these profound and difficult questions in the philosophy of natural history. It has been our object here only to carefully observe, and put on record, a few of the data upon which the settlement of such questions must ultimately depend.

DESCRIPTION.

Length, three-tenths of an inch. Expanse of wings, seven-tenths, cinereous. Top of the head, collar and tegulæ, in some specimens, almost white. Fore wings cinereous, with nearly the basal third usually paler; a large triangular blackish spot on the middle of the costa, just beyond which and nearly in the middle of the wing are two black dots, placed transversely; about one-fourth from the end of the wing is a very obscure blackish double bar, and still nearer the tip an obscure row of blackish dots; on the posterior part of the wing, or that part which is opposite the costa, are two rather large pale brick colored spots, one at the base and the other one-third of the way to the tip. Hind wings paler, somewhat dusky towards the tip. Abdomen inclining to pale buff, more or less distinctly fasciate with black at the bases of the segments.

All the above characters, except the occasional whitish on the head and thorax and the paler base of the fore wings, are found much more conspicuously on the *Phycita nebulo*. Indeed, these marks are usually either wholly or partially indistinguishable on the *P. juglandis*, and it would be scarcely possible to distinguish the two insects by any verbal description, if we did not take into account their very distinctive characters and habits in the larva state. As these characters are well exhibited in the accompanying figures, it will not be necessary to describe them more fully than we have already done in the body of the article. We may also add, as a pretty constant distinctive mark between the two moths, that the two dots on the disk of the upper wing in *P. juglandis* almost always run together in *P. nebulo*, forming a very short, black, transverse bar.

All the Ichneumon-flies which I bred from these insects I passed over to Mr. Riley, who will describe them in his next annual report.

The Tachina-fly, above spoken of as having been bred from the larvæ of *Phycita nebulo*, I describe below.

DIPTEROUS PARASITE OF PHYCITA NEBULO.

(*Tachina* (*Exorista*) *phycitæ*, n. sp.)

Male.—Length, 0.20 inch, or two-tenths of an inch. Antennæ black; third joint twice as long as the second. Face silvery, without bristles at the sides; sides of the front with a dull gray tint, becoming silvery at its junction with the face; the middle black vitta occupying a little more than half of the interocular space; frontal bristles continued down the face to opposite the junction of the second and third joints of the antennæ. Palpi blackish brown. Eyes hairy. Thorax black, with the ordinary cinereous stripes scarcely perceptible. Abdomen black, varied with cinereous at the bases of the segments; a large fulvous spot on the side of the abdomen, occupying nearly the whole of the side of the second segment, about half of the third, and sometimes a small spot on the first; bristles on the middle, as well as at the end, of the second and third segments. Venation of the wings of the usual type; first posterior cell almost closed before the end of the wing; fourth long vein slightly curved beyond the angle; fifth long vein prolonged to the margin; hind cross vein moderately curved. Tarsal claws and pulvilli unusually long.

Female.—A single specimen, a very little larger than the others, was obtained from the same lot of Phycitæ, which may be the female of this species. It differs as follows: Front broader. Antennæ inclining to brown. The cinereous markings on the body more distinct. The tip of the abdomen fulvous, but without the fulvous spot on the side, and with the tarsal claws of the usual length.

This species appears to belong to the sub-genus *Exorista*, of Meigen, closely allied to Tachina proper, and differing from it chiefly in having the eyes hairy, and in the presence of bristles on the middle of the second and third abdominal segments, as well as at their posterior margins, whilst Tachina has only the latter.

The following table exhibits the distinctive characters of the three closely allied sub-genera, Tachina, Exorista and Lydella:

Third joint of the antennæ about twice as long as the second. Face nearly vertical, with few or no bristles at the sides.
  Eyes naked. Stout bristles at the hind margin only of the second and third abdominal segments .... Tachina.
  Eyes hairy. Stout bristles on the hind margin and middle of the abdominal segments .... Exorista.
Third joint of the antennæ three times as long as the second. Face oblique, bristled at the sides. Eyes generally hairy. Usually two bristles on the middle of the second and third abdominal segments .... Lydella.

PERIODICAL CICADA.

(*Cicada Septendecim.* Linn.)

Order of HOMOPTERA. Family of CICADIDÆ.

Harris' Treatise, page 206; Fitch's First Report, page 38; Riley's First Report, page 18.

The year 1871 has witnessed one of the periodical returns in Northern Illinois and the borders of the contiguous States, of this notorious insect, more commonly known by the name of the Seventeen-year Locust.

In several respects this is one of the most remarkable and anomalous of the insect tribes. Its unprecedented longevity in its larval state and subterranean abode, the regular periodicity of its appearance, and the elaborate and systematic deposition of its eggs in the twigs of trees, often near the summit of forest trees, whilst the young hatched from them live exclusively in the earth, are all calculated to attach a peculiar interest to the history of the Cicada.

The history and habits of this insect after it has emerged from the earth and assumed its winged form, have been pretty thoroughly traced by the authors enumerated at the head of this article, and by many other observers. To those authors the reader is referred for a detailed account of this insect. We shall, in the present article, confine ourselves chiefly to a record of the observations made during the season, and especially to such facts as bear upon unsettled points in its history.

GEOGRAPHICAL RANGE.

Amongst the many remarkable circumstances in the history of the Periodical Cicada, is the great extent of country in which they have at one time or another prevailed. Their appearance has been recorded, within the last two hundred and forty years, over the whole extent of the United States, from Massachusetts to Florida, on the East; North, to Michigan and Wisconsin; South, to the Gulf States; West, to parts of Kansas and Nebraska; and South-west, to Louisiana and Texas. And as it is now known that during all the intermediate periods these insects are maturing under ground, at the depth of from one and a half to six feet, we must conclude that all parts of the country where trees suitable for the deposit of their eggs have grown, are, at all times, undermined by the larvæ or grubs of this insect, in different stages of development. It must not be understood, however, that they are equally abundant in all places.

Sometimes two broods appear in different sections of the country in the same year. These have been described as the brood of such a year. But it is evident that when these insects prevail in two or more places, remote from each other, they must constitute distinct broods, and should be designated by their locality in connection with the year.

NUMBER AND DEPOSITION OF EGGS.

The eggs of the locust are laid in the twigs of all deciduous trees, and sometimes, though rarely, in evergreens. They are deposited in grooves, cut through the bark and into the solid wood of the twig, by the finely saw-toothed ovipositor of the female insect. In performing this operation she clings to the twig, with her back downward, and consequently lays her eggs in the under side of the twig. Without changing her position she cuts, or rather saws, two grooves, side by side, but slightly diverging at their further extremities, leaving a wedge-shaped partition of wood between the two cells. When thrust into the twig, the ovipositor throws up a little bundle of finely separated woody fibres, free at one extremity, which secures a passage for the young insects, by preventing the bark from closing over the cavity—just as the surgeon prevents an opened abcess from closing too soon, by placing a linen tent between the lips of the wound. The female deposits about a dozen oblong whitish eggs, less than the twelfth of an inch long, in each cell, placing them two and two, at an angle of about 45°, lapping upon each other, and pointing towards the loose and open end of the splintered fibres, directly under which they are placed. After filling the two cavities with eggs, she moves on a few steps and makes two other cavities, and so on till her store of eggs is exhausted. The number of eggs laid by each female is about four hundred. In those which I have dissected I have found them to vary from three hundred and eighty to four hundred and twenty.

TIME AND CONDITIONS OF HATCHING.

Mr. Riley states that in the region of Saint Louis the eggs of the Seventeen-year Cicada hatch from the 20th of July to the 1st of August. In the latitude of Chicago some of them remain unhatched a month, at least, later. On the 24th, and again on the 28th, of August, I saw individuals in the act of hatching, though in most instances only empty egg shells could be found.

As the young locusts obtain their subsistence not on the tree but in the earth, and as many of the twigs stung by the parent insects break off and fall to the ground, carrying the eggs with them, it has been commonly supposed that this constitutes a part of the natural economy of the insect; but this supposition proves to be erroneous. On the contrary, it is found that in the twigs which die, whether they fall to the ground or hang upon the tree, the eggs do not come to maturity, the moisture of the growing twig seeming to be essential to the development of the eggs.

Upon examining the eggs in many twigs, in the latter part of August, I found, quite uniformly, that in the living twigs the young had hatched and gone, leaving only the white membranous envelopes behind, whilst in the dead twigs the eggs were unhatched, somewhat shrunken, and of a pale-brownish or amber color. Some exceptional cases are seen, where vacant eggs shells are found in dead twigs; but these cases can be plausibly explained, upon the supposition that though the twigs ultimately perished they retained their vitality long enough to perfect the enclosed eggs. The sound egg, when near the time of hatching, can always be distinguished from the abortive eggs, not only by their whiter color, but more definitely by the presence of two distinct dark-red spots at one extremity, which are produced by the eyes of the enclosed insect showing through the thin envelope.

The death of the twig is caused simply by the mechanical violence done to them in the act of depositing. Accordingly it is usually only the small terminal part of a twig that perishes, whilst the stouter basal part, which is proportionately less damaged, survives.

These insects also sometimes, but rarely, perish in the egg from the opposite cause, namely: the too rapid growth of the twig in which they are deposited. This sometimes occurs in thrifty young apple-trees, and in twigs of considerable size, usually as large as a man's finger, where the injury caused by the deposition of the eggs has not been sufficient to check, materially, the growth of the branch. In such cases the twigs grow so rapidly that, in the course of the month which intervenes between the time of the laying and the hatching of the eggs, the wound heals completely over, the tent of splinters is nearly or quite over grown, and the young insects never emerge from the eggs, being enclosed in a living sepulchre.

LARVAL HISTORY.

Of the protracted subterranean life of these insects in their larva state, of the nature of their food, the depth to which they usually penetrate, and the extent of their underground migrations, we know almost nothing. The following is a condensed statement of the past record upon this subject:

In the year 1846 Miss Margaretta H. Morris, of Germantown, Penn., found a number of locusts in their larva state, and varying from a quarter of an inch to an inch in length, attached to the roots of some languishing pear trees. But if this is their habit, it is remarkable that no similar observations have been made by others. And the statement that an insect so regular in its development as the Cicada was found of such different sizes, would render the identity of the insect questionable, were it not for the well known accuracy of this lady in her entomological observations.

Mr. R. W. Kennicott, of West Northfield, Illinois, wrote to Dr. Fitch that in following down a foot or more, in the month of November, the roots of several trees and shrubs, the twigs of which had been badly cut to pieces by the locusts of the previous year, he could find no trace of the insects. But this is only negative testimony, and the insects, at this period, must have been so small that they might have been easily overlooked.

Dr. Gideon B. Smith, of Baltimore, who made extensive observations upon these insects, held the opinion that these grubs subsist exclusively upon the moisture which exudes from the surface of the vegetables radicles which permeate the earth.

He says, "It takes its food from the surface of these roots by means of three exceedingly delicate capillaries or hairs which project from the tube of the snout, and sweep over the surface, gathering up the minute drops of moisture. This is its only food. The mode of taking it can be seen with a good glass."

I have no means of knowing the method, or extent, or accuracy of Dr. Smith's observations, but if the above account is correct, the way in which this insect takes its food is as anomalous as many other portions of its history. The only instance that I know of, in the history of insects, at all resembling it, is the lapping of the honey of flowers by some of the *Hymenoptera.*

As Dr. Smith is the only one who has recorded any observations upon the larval history of these insects, I will extract a few additional items of interest from his account, more especially as his observations are not published in any work of ordinary reference. He says that they occupy oblong cells in the earth, from one to three inches in length, in which the insect freely moves. When the food to which this cell gives access is exhausted, the insect moves gradually into fresh earth by digging from one end of its cell and throwing the loose earth back into the other end. The depth to which they usually penetrate into the earth has not been satisfactorily determined. One of my correspondents who plowed up large numbers of them in the spring, found that he could trace their holes down about a foot and a half; and Dr. Smith states that he has frequently found them from one to two and a-half feet from the surface of the ground. But there are many well attested cases on record of their being found from three to six feet, and in one case ten feet below the surface. The following additional cases have come to my knowledge. Mr. Charles W. Woolston stated to me that he found them six feet under ground whilst digging a roadway through the side of a hill. Mr. Geo. S. Haskell, of Rockford, saw them come up through the bottom of a cellar in the latter part of April. And Dr. N. S. Read, of Chandlersville, in Cass county, writes, that whilst examining some mounds on the bluffs of the Sangamon river, in the spring, he found fully grown grubs of the *Cicada* five feet below the surface.

Mr. Henry W. Searls gave me the following more explicit statement. Whilst digging a vault in connection with one of the public school houses in this town, on the fifth of September, 1868, he found the locust grubs four feet from the surface. The ground was so hard that it had to be loosened with a pick axe. The grubs were nearly fully grown, rather softer and paler than the mature grubs, but active and apparently in good condition. It will be observed that this was three years before the period of their maturity. The date of the observation is also worthy of particular notice as it serves to fill an important gap in their history. In the accounts of these cases it has usually been omitted to state the time of year when the observations were made, and therefore we have been left in doubt whether the insects had probably retired to these depths for winter quarters, or were living and feeding so far under ground in the active period of the year. The latter must be supposed to have been the case, in the present instance, the insects having been found as early as the fifth of September. Such facts, taken in connection with the circumstance that vegetation does not usually appear to suffer from their subterranean feeding, go to show that their usual range is several feet below the surface. But this only leaves the nature of their food involved in the greater uncertainty.

Such accounts as these are very unsatisfactory, but they may serve to draw attention to those parts of the Cicada's history which most stand in need of elucidation.

TIME OF APPEARANCE AND DISAPPEARANCE.

A period of from five to six weeks covers the whole time in which the Cicadas are seen in their perfect or winged state. At the time of the appearance of the more southern brood in 1868, Mr. Riley states that he saw the first Cicada on the 22d of May, and that none were to be seen after the fourth of July. My observation of the northern brood coincides almost precisely with this—having seen the first on May 23d, and the last on the 1st of July. Mr. Wier wrote to me that he first saw them on southern exposures, at Lacon, on the 19th of May. Dr. Smith states, that in Maryland and Pennsylvania, their time of emergence from the ground was from the 20th to the 25th of May, thus corresponding precisely with the periods recorded above, and showing a remarkable uniformity in the time of their appearance in different latitudes, and remote localities. Straggling individuals, however, continue to emerge long after their general appearance. I saw instances of this as late as the 12th and the 17th of June.

GEOGRAPHICAL EXTENT OF THE BROOD OF 1871.

A good deal of interest has heretofore been taken by others as well as entomologists, in tracing the geographical outlines of the different broods of the so-called 17-year locust. It seemed, therefore, to be one of the special duties of the State Entomologist of Illinois, in the season of 1871, to determine, as nearly as possible, the range of the present brood, and to make a record of it, which may be consulted by those who may take an interest in this matter, seventeen years hence. I have, therefore, entered into a somewhat extensive correspondence upon this subject, with persons in different parts of this and the neighboring States. The following is a condensed statement of the results of these inquiries:

In the "Prairie Farmer" for July 29th, a brief outline of the locust range was published by Mr. Suel Foster, of Muscatine, Iowa; but in this outline, as Mr. Foster himself stated, many gaps were left undetermined. I have found Mr. Foster's outline to be, in the main, correct, and have filled, as far as possible, the gaps which he left. I will take the same starting point with Mr. Foster, namely, the junction of the Iowa river with the Mississippi, in Louisa county, Iowa. Thence, in a northwesterly direction, following the eastern branch known as the Cedar river, as far north as about opposite the mouth of the Wisconsin river. Thence east, in about the same line of latitude to Lake Michigan, following the Wisconsin river so far as it lies in this line, thus leaving out the northernmost counties of Iowa, and including the two lower tiers of counties of Wisconsin. Thence, southernly around the lower extremity of the lake, and taking in the northwestern corner of Indiana, as far south as the Kankakee river. If they extended at all into Michigan, it could only have been a little over the line, as advices from Kalamazoo, and from two witnesses in Benton Harbor, agree in certifying that no locusts were seen in those localities. Thence, taking our departure from about the point where the Kankakee river crosses the Indiana border, the locust line takes a southwesternly direction through Iroquois county, till it strikes the head waters of the Sangamon river, in the northwestern corner of Champaign county. From this point, the Sangamon river seems to have formed very nearly the southern border of the locust range. By looking upon a map it will be seen that this river takes, first, a southwesternly and then a westernly direction, till it reaches the vicinity of the city of Springfield, which seems to have been the southernmost limit of these insects. Thence, the locust line continues to follow the river, first northernly, through Menard county, to the northern boundary of said county, and then west on the dividing line between Cass and Mason counties, to its junction with the Illinois river. From this point there appears to have been a gap in the locust line until we reach the southern part of Peoria county, a little below the entrance of the Mackinaw river, in Tazewell county, into the Illinois, where the locusts were abundant. From the southern point of Peoria county the line strikes northwest, taking in the northeast corner of Fulton county, and continuing through Knox county on about a line with the city of Galesburg, where only a few locusts were seen. Thence north, to the eastern border of Mercer county, and thence west, through the middle of Mercer county, following, in the main, the course of the Edwards river to its entrance into the Mississippi, nearly opposite the mouth of the Iowa river, which was the place of beginning.

The only gap in this outline, of any considerable extent, that I have heard of, is the one above referred to, between the Sangamon river on the south, and the Mackinaw river in Tazewell county, on the north—the average course of this last named river being about on a line with the southern point of Peoria county, and the intervening space embracing the whole of Mason county. This gap is the more remarkable at first sight, inasmuch as the bluffs on both sides of the Illinois river are well wooded, and would, therefore, seem to form a natural continuation of the locust range. The first explanation that occurred to me of this break in the line, was in the sandy nature of the soil in this locality. Mr. J. Cochrane, of Havana, Mason county, in his communications to me upon this subject, speaks of the sandy character of the soil, and subsequently, Mr. Stephen Tompkins, of Avon, Fulton county, who is an old resident of this county, and who has often traversed it in all directions, described to me more particularly the character of this section. He stated that from the southern point of Peoria county to Beardstown, six miles below the mouth of the Sangamon river, the soil is very sandy on the east side of the Illinois river, but less so on the west side. At Beardstown the soil changes, becoming more intermixed with loam, and it is a curious fact that a few locusts were seen at this place, though it lies somewhat below the locust line. The supposition was that the locust grubs do not find, in this sandy soil, the kind of subterranean vegetation upon which it is their nature to subsist. But the correctness of this explanation was disproved by subsequent correspondence with Mr. Cochrane, in which he stated that there was an abundant brood of locusts in Mason county a number of years ago, about the year 1859 or 1860—as nearly as he can recollect—and that the groves and thickets of what is known as the black-jack oak, were, in particular, badly cut up by them. Mr. Tompkins also spoke of a visitation of locusts in Fulton county, about ten years ago. Both these gentlemen, undoubtedly, refer to the brood of 1861. The records show that there was a brood of locusts in this year, which occupied a narrow strip of country, including the northern border of Missouri and the southern border of Iowa, and extending across the middle of the State of Illinois, in the line of McDonough, Fulton, Mason, and Champaign counties. So that it would seem that the true explanation of the absence of locusts in Mason county in the year 1871, is the pre-occupation of this territory by another and perhaps older brood.

It will have been observed that in giving the above locust range I have often referred to rivers as forming its boundaries. It will, of course, be understood that it is not the rivers themselves, but the wood which skirt their banks, which really constitutes the boundary.

It is not to be inferred that all places within this outline were equally infested by these insects. Every one who traveled through this extensive region during their active period must have remarked that the locusts were much more abundant in some places than in others, even where the supply of timber was equally abundant. I heard of several curious instances of their being abundant at one end of a long grove, and almost wanting at the other.

Neither must it be understood that no locusts were seen outside of this range. The locust-line is not a simple and straight one, but more or less zig-zag, being necessarily much governed by the presence or absence of the timber which constitutes the natural depository of the nsects' eggs. Stragglers have often been seen many miles out upon the prairie, having been driven, sometimes, by high winds, and possibly being impelled by an instinct to extend their borders.

I may here remark, in passing, that the Northern Illinois brood of locusts of 1871 meets and interlocks more or less with the Sothern Illinois brood of 1868, which also extended further east, into the State of Indiana. Champaign county, in Illinois, which lies on the dividing line, seems to belong more to the southern than the northern brood, inasmuch as but few locusts were seen in this county in 1871, and these mostly in the northwestern part, whilst all the southern half of the county was densely infested by them in 1868.

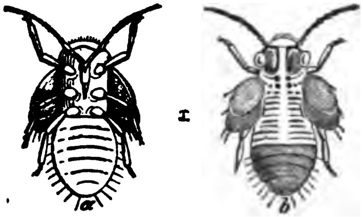
I take this opportunity to express my thanks to the many persons who have assisted me in this enquiry, and upon whose authority the above statements are made. I deem it just and proper to give the names of these individuals in their geographical order. Suel Foster, of Muscatine, Iowa; Charles W. Lillie, Independence, Iowa; J. L. Budd, Cedar Rapids, Iowa; Postmaster of Lansing, in Northeastern Iowa; Dr. John Conant, Prairie du Chien, Wisconsin; Morrow and Brother, Madison, Wisconsin; L. Camfield, Benton Harbor, Michigan; Judge David Turner, Crown Point, Indiana; J. B. Dodge, Warsaw, Indiana; Dr. J. H. Longbridge, Rensselaer, Indiana; P. D. Hammond, LaFayette, Indiana; B. N. McKinstry, Kankakee, Illinois; L. H. Fairchild, Danville, Illinois; J. R. Parks, Tolono, Illinois; E. Daggy, Tuscola, Illinois; Prof. Burrill and Dr. Howard, Champaign, Illinois; Charles S. Davis, Decatur, Illinois; Prof. J. B. Turner, Jacksonville, Illinois; J. T. McNeely, Petersburg, Menard county, Illinois; Dr. J. F. Snyder, Virginia, Cass county, Illinois; J. Cochrane, Havana, Mason county, Illinois; Postmaster of Canton, Fulton county, Illinois; Postmaster of Farmington, Fulton county, Illinois; Stephen Tompkins, Fulton county, Illinois; Dr. A. G. Humphrey, Galesburg, Illinois; Tyler McWhorter, Aledo, Mercer county, Illinois.

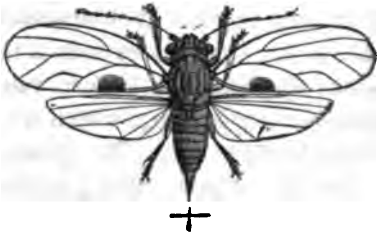
TREATMENT.

The Periodical Cicada cannot be considered, in a practical point of view, as an insect of very serious character. Even if the injury caused by them were more severe than it is, the long period which intervenes between their successive appearances, would reduce them to the rank of not more than a third class noxious insect. The damage done by them, as a general rule, amounts to nothing more than a pretty severe twig-pruning, which is out grown in a year or two, by trees of considerable size. But young nursery and orchard trees are often severely cut up by them, and sometimes killed outright.

All attempts to check or drive away the locusts after they have made their appearance, have proved futile. The only practical rule of any importance respecting them is, to avoid planting a nursery or young orchard upon cleared land, or in the vicinity of timber land, where it is known by experience, that these insects will make their appearance in a few years.

INSECTS INJURIOUS TO THE PEAR TREE.





Explanation.—Psylla Pyri—*a*, pupa, showing the under side; *b*, upper side of same

THE PEAR FLEA-LOUSE.

(*Psylla Pyri*, Linn ?)

Order of HOMOPTERA. Family of PSYLLIDÆ.

Whilst visiting the fruit farm of Mr. Parker Earle, of South Pass, on the first of June, my attention was called to the sickly condition of some of his young pear trees, apparently caused by a leakage of sap from the axils of the leaves; in some instances running down the branches and trunk to the ground.

Mr. Earle had examined his trees a number of times for the purpose of discovering the cause of this mischief, but on account, as it afterwards appeared, of the very small size and concealed position of the real culprit, he had failed to detect it. Upon turning my attention particularly to the points from which the flow of sap seemed to originate, and with the aid of a pocket lens, I discovered, imbedded in the axils of the leaf-stalks, and immersed in the exuding sap, from one to half a dozen minute, louse-like insects, which were evidently the cause of the injury. I afterwards captured a few of the mature or winged insects which furnished the clue to their name and character. They belong to the Homopterous Genus *Psylla* of Geoffroy, and are very similar to, if not identical with a species equally injurious to the pear tree in Europe, to which Linnaeus gave the name of *Chermes Pyri*.

Dr. Harris gives a short account of the damage produced, probably by the same species, in Massachusetts, between the years 1834 and 1838 inclusive, and speaks of one individual who lost several hundred pear trees from this cause. No record however has heretofore been made of its appearance in the Western States.

The following additional particulars in the habits of this insect were subsequently communicated to me by Mr. Earle, under date of July 10:

"I first observed the strange exudation of sap on the leaves of my pear trees about the middle of May, noticing it first upon the Duchess d'Angouleme variety. After a few days the injury seemed to extend to every leaf of every tree of that variety in the orchard, and to a less general extent, involving the Howell, Bartlett, and Lawrence varieties. The sap exuded most seriously from the axils of the leaves, but was found in globules, scattered over the surface of most of the leaves, slowly drying away to a sticky sirup. All growth was at once arrested, and the trees lost a portion of their leaves, amounting, in some cases, to more than a quarter of the foliage. The extent of their ravages was about as great at the time of your visit, on the first of June, as at any time thereafter. I saw no particular change for a week or so, when we had a heavy rain, after which they appeared less numerous. But whether the little pests were destroyed by the rain, or had just then reached the end of their destructive career, I am not able to say. The whole term of their visible depredations in my orchard was a little less than one month. I find that my neighbors suffered in the same manner and to about the same extent."

Many species of insects are found inhabiting the two continents, which are so similar to each other, that they have been denominated representative species. The increased facilities of communication are, every year, bringing new instances of this kind to the knowledge of entomologists, in which insects that have long been supposed to be peculiar to one country, are found repeated in the other, with no greater variation than species are known to undergo, in their own country, from a change of food, locality, and other circumstances. Whether these insects are really distinct species or modified descendants from a common origin, is one of those obstruse questions in natural history, which, with our present knowledge, we are, in many cases, unable to decide. But where the species in question are known to subsist upon the common fruit-trees or vegetables, and where their transportation can be easily explained, the best course would seem to be to assume their identity, unless the differences are important and of a decidedly organic character. One of these instances is furnished by the little insect now under consideration. From a comparison of the few specimens of the winged insect in my possession, with such descriptions of the European insect as I have access to, I should be led to regard them as different species; but a colored figure of the *Psylla pyri* of Europe, by the accurate hand of Mr. Westwood, communicated to me by Mr. Riley, resembles my specimens so nearly in coloring, and so precisely in the venation of the wings, that I do not feel authorized in considering our insect as a distinct species, without further investigation.

I will briefly direct attention to those points in which the discrepancy seems to exist.

M. Kollar, a German author of good standing, describes the European insect as varying somewhat in its hues at different seasons of the year, but as having, when in its fullest maturity, the head and thorax of an orange or a crimson color, shaded with black in the male, the abdomen green, and the wings snow-white.

Our species is also of a deep orange-red color, but the thorax is not merely shaded, but distinctly striped with black, as shown in the annexed figure. The abdomen, at least in the dried specimen, is blackish-brown, and the wings are clear, and in no sense snow-white.

The common habit of the larvæ and pupæ of our species of nestling in the axils of the leaf-stalks, and thus escaping observation, I do not find mentioned in the history of the foreign species.

In consideration of the economic importance of this insect, and of the interesting position which it holds in a scientific point of view, it might be appropriately designated by the specific name of *americana*, if it should be decided to be a distinct species.

I will not occupy more space by a minute description of these insects, but refer the reader to the figures at the head of this chapter, which exhibit the insect in both its perfect and preparatory stages, greatly magnified.

It is proper to add, however, that my specimens of the winged insect not being sufficiently well preserved to be correctly figured, I have made use of a cut, taken from a specimen from Massachusetts, which is presumed to represent the same species.

INSECTS INJURIOUS TO THE PLUM.

THE SMALL BRONZE FLEA-BEETLE.

(*Haltica helxines.* Linn.)

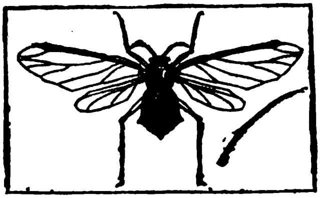
Order of COLEOPTERA. Family of CHRYSOMELIDÆ.

These pretty little beetles are found upon several kinds of fruit trees, early in the spring, eating roundish holes through the leaves, and sometimes destroying the petals or flower leaves.

They are only the tenth of an inch in length, and are of a coppery-brown or bronze color. In the Walsh Cabinet were specimens referred to this species, of a beautiful metallic green. Like others of their genus, they have very stout hind thighs which enable them to skip out of sight, when disturbed. From their appearance so early in the season, it is evident that like many other of the leaf-beetles, they hibernate in the perfect state.

They are seen upon the plum, the apple and the pear, and they seem to be partial to the tender foliage of the suckers which spring up around the base of the trunk. I have seen the foliage and the blossoms of the plum tree, in particular, so riddled by these insects as to attract notice from a distance, and to a sufficient extent to entitle this species to a place on the list of what may be called the minor noxious insects. My attention was first attracted to them in the latter part of April. On the 6th of May they were seen pairing, and before the middle of the month they had mostly disappeared, having, no doubt, laid their eggs and perished, as is the general course of insects after having provided for a future generation. I examined the infested trees several times in the course of the season, but failed to discover either the eggs or the larvæ of the insects. Should these insects become troublesome, they would have to be treated upon general principles: that is, the application to the tree of some of those substances which are known to be obnoxious to insects but harmless to vegetation, such as lime and whale-oil soap.

INSECTS INJURIOUS TO THE WILLOW.



THE SPOTTED WILLOW-APHIS.

(*Lachnus dentatus*, n. sp.)

Order of HOMOPTERA. Family of APHIDÆ.

Found in flocks, in October and November, on the under side of the branches of the gray willow. They were also found in smaller numbers on the trunks of small nursery apple trees, standing about a rod from the willows. When crushed, they stain the fingers with a thick reddish fluid.

Length, two-twelfths of an inch; expanse of the wings, six-tenths. Black; abdomen, dark ash-colored, with six transverse rows of black dots. Antennæ, filiform, as long as the head and thorax; two basal joints, short and stout, the third as long as the three terminal ones united; these three equal. Proboscis, greenish-yellow at base. Fore wings, with the usual stout sub-costal vein, and a very elongate stigma; three discoidal veins, (exclusive of the stigmatic vein,) much wider apart at their tips than at their bases; third vein, two-forked; hind wings with a sub-costal and two discoidal veins, the latter very closely approximate at base and divergent at tip. Thighs, dark honey-yellow, broadly tipt with black; tibiæ, dusky; reddish at the base.

The honey-tubes are sub-obsolete. The dots on the abdomen are very distinct, especially on the fully-grown, wingless individuals. In the intermediate rows, the dots are six in number, the two middle ones being smaller than the others. Just behind the middle of the abdomen, and occupying the place of the two middle dots in the fourth row, is a somewhat conspicuous black, conical protuberance, varying in size in different individuals, and sometimes considerably more prominent than it is represented in the figure.

This species belongs to the genus Lachnus, of Illiger, which differs from Aphis proper in the shortness of the antennæ, the seventh joint being rudimental or wanting, in the very short and almost obsolete honey tubes, and in the habit of the species of stationing themselves on the limbs of trees instead of the foliage.

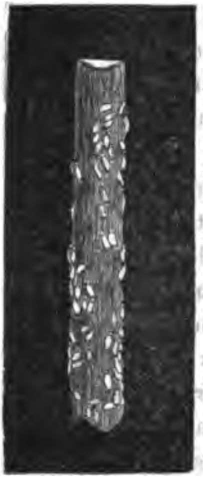
I cannot find that this species has been described, and Prof. Uhler, of Baltimore, to whom I transmitted specimens, confirms this opinion. Dr. Harris describes a similar species found on the pig-nut hickory, but this is a much larger species and has but four rows of dots on the abdomen. The same author also describes a species found, like the present, on the limbs of the willow, and also resembling this in staining the fingers red, when crushed. But this is a smaller species and wholly destitute of the characteristic dots on the abdemen. Dr. Fitch also briefly describes a species found on the willow, under the specific name, *sallicelis*, which he refers to the genus Lachnus; but this is a still smaller species, and also, so far as we can judge from the description, without spots on the abdomen. From the similarity in habit of Dr. Harris' species just referred to, the suspicion arises whether that may not prove to be an abnormal variety of the present species. In that case Dr. Harris' species would stand as a variety of the present, inasmuch as the specific name of *Salicti*, given by him to that species, had been pre-occupied.

In selecting a name for this rather large and well-marked species, the term *salicis*—meaning, *of the willow*—which first suggested itself, was abandoned on account of its resemblance to several other terms, which mean essentially the same thing, and which have been already employed to designate other species of *Aphides*. The term *salicis*, itself, moreover, has been applied by Linnæus to a European species of the genus *Aphis*, and it is always desirable to avoid the repetition of the same specific term in naming the species of closely allied genera. The term *punctatus*, referring to the dots on the abdomen, would to be very expressive, but it is not sufficiently characteristic. f. Uhler informs me that all the species of the genus *Lachnus* in collection have the abdomen more or less spotted, so that this would to be a generic rather than a specific character. I therefore use of the term *dentatus*, having reference to the conical or *tooth-* process on the middle of the abdomen, and which, so far as I can , is peculiar to this species.

THE WILLOW BARK-LOUSE.

(*Mytilaspis salicis*, n. sp.)

Order of HOMOPTERA. Family of Coccidæ.



On the 8th of May, 1870, I received from Stark county, some twigs of the gray willow, densely infested with a pure white bark-louse scale, of about the same size as the Oyster-shell Bark-louse of the apple tree, being about one-tenth of an inch in length, but of a more regularly oblong, oval shape, and exhibiting but little of the curved or muscle shell form, which gives the scientific name to this genus of *Coccidæ*, and resembling more nearly, both in form and color, the scales of the bark-louse of the pine. They also resemble this last species in having blood-red eggs. The number of eggs under each scale averages about seventy-five, exceeding in this respect those of the apple tree, which usually have about forty-five or fifty, and still more those of the pine which rarely exceed thirty.

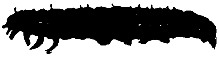
The eggs were just hatching at the time of their reception. The young, like the eggs, are deep-red. Indeed, it is the young within the transparent shell which gives to the egg its color. They exhibit, under the microscope, all the characters of the young of the other species of the genus *Mytilaspis*, being of an oval form, with short, tapering, divergent antennæ, and two anal filaments, as long as the body, but so fine at the extremity that the terminal third is only visible under a strong magnifier. The four digituli, or little finger-like processes with which the feet of this family of insects terminate, are very distinct in this species.

As the minute lice were just hatching at the time of their reception, I tried the experiment of tying one of the infested twigs to a branch of the gray willow, taking pains to adjust it so that the young insects could easily pass on to the tree. For some reason the experiment failed. I could never find the least trace of the insects upon the tree to which they were attached, and yet they were transferred to precisely the same kind of tree as that from which they were taken, and in not far from the same latitude. This failure may, therefore, teach us a useful caution against hasty conclusions in our experiments of transferring such minute insects from one kind of a tree to another. The failure of the experiment does not necessarily imply that the insects perish from incongeniality of food.

The twig from which the figure was taken, was much less densely infested with scales than some of the others.

INSECTS INJURIOUS TO GRAIN.

1



2

THE STALK-BORER.

(*Gortyna ritela.* Guenée.)

Order of LEPIDOPTERA. Family of NOCTUIDÆ.

The larva of this moth is a dark livid, naked worm, with a few imperfect whitish stripes, tapering a little at each end, and upwards of an inch and a quarter long, when fully grown. They have been known for a number of years, as doing considerable damage to various plants, by boring into their stalks. They have been most injurious to potatoes and tomatoes, and to garden flowers, especially dahlias and asters. It is closely allied to another species, the Gortyna zeæ of Harris, the larva of which bores into the stalk of the young plants of the Indian corn, causing them to wilt, turn yellow, and perish. There is no record of either species having been known to attack the small grains. An instance of their injury to the wheat plant, however, has come to my knowledge, the past season, of sufficient extent to warrant serious apprehensions that this most important crop may have another added to the already formidable list of its insect depredators.

On the 20th of June I received a number of these worms from Mr. A. E. Lansing, of Blooming-grove, Wisconsin, with the following note: "Inclosed in a tin box you will find three pieces of straw, containing worms, which are making a great destruction in the wheat fields. The like has never been seen in these parts. Some call it a weevil, but no one is able to tell what it is. I have seen it in all my neighbors' early wheat. One piece of two acres of very early wheat is entirely ruined. This is five miles east of Madison."

The worms were at this time less than half grown, but could be easily identified as the larvæ of the moth named at the head of this article.

It is a very important question whether these insects are likely to multiply and spread so as to become a serious enemy of the wheat crop, in the more northern latitudes. It is worthy of remark that these larvæ usually inhabit the larger and more succulent plants, and do not attain their full size, so as to be prepared to transform, until about the end of July. There is some reason to hope, therefore, that the wheat plant will not prove to be sufficiently succulent and long-lived to enable them to come to that perfect maturity, which is essential to the free propagation of the species.

We have given above figures of this insect in both its larva and winged states, to aid in their identification. If they should make their appearance another season, and especially if they appear to be spreading, it will be very desirable that those suffering by their depredations shall make notes of their times of appearance and disappearance, and other habits, so that we may be enabled to suggest some rational means of checking their increase.

THE CHINCH-BUG.

(*Micropus leucopterus*, Say.)

Order of HETEROPTERA. Family of LYGÆIDÆ.

Harris's Treatise, page 198. Fitch's 1st and 2d Reports, page 277. Riley's 2d Report, page 15. Shimer, in Proc. Phil. Acad. Sc., May, 1867.

The summer of 1871 has been chiefly remarkable in this State, in an entomological point of view, for the periodical appearance of the 17-year Cicada, and the excessive prevalence of the notorious Chinch-bug.

Some idea of the loss caused by the depredations of this last named insect, in this and the neighboring States, may be realized when we learn that over a belt of territory one hundred miles wide, commencing in the western part of Indiana, and extending more than fou hundred miles west, embracing an area of more than forty thousan square miles, the great staple of spring wheat was reduced to not mor than a quarter of an average crop, and in many places wholly de stroyed; and that over the same territory barley was less than half crop, and oats not more than three-quarters of their usual amount, The center of this belt appears to have been a little north of the center of the State, being about on a line with the junction of Iowa and Missouri, and taking in a corresponding part of Southern Iowa and Nebraska and of Northern Missouri and Kansas. South of this belt winter wheat takes the place of spring wheat and barley, and the Chinch-bugs, though present in considerable numbers, ceased to commit any very serious damage. North of this belt, also, notwithstanding that spring wheat constitutes a leading crop, the bugs became gradually less numerous, and a tolerable crop of this grain was harvested. And yet all through Northern Illinois and the southern part of Wisconsin. these insects were numerous enough to damage the crop to some extent, and to excite the most serious apprehensions for the succeeding year.

In order to obtain as correct an idea as possible of the amount of loss sustained by the agriculturist from the depredations of this insect, the past year (1871), both in this and the other Northwestern States, I have made the following calculation, based upon the statistics of the Department of Agriculture, with a reasonable estimate of the proportional damage caused by this insect to those crops upon which they depredate. All such calculations must necessarily be only approximately correct, and very loose and extravagant conjectures have sometimes been indulged in upon the loss caused by Chinch-bugs in former seasons of their prevalence. It has been my intention to keep within reasonable bounds, and by giving the figures in the case I give others the opportunity to review my estimates.

Taking the returns to the Department of Agriculture, for the years 1869 and 1870, for our guide, we may assume the present annual yield of wheat, in the State of Illinois, to be 30,000,000 of bushels; of oats, 40,000,000; and of barley, 2,000,000.

The area seriously ravaged by these insects, comprised, as we have above stated, about the middle third of the State. This section would bear its full proportional third of the wheat and oats, and at least one-half of the barley raised in the whole State. This would give as the product of that part of the State ravaged by Chinch-bugs, 10,000,000 bushels of wheat, upwards of 13,300,000 bushels of oats, and 1,000,000 bushels of barley. The proportion of these crops destroyed by Chinch-bugs, we have put at three-quarters of the wheat, one-half of the barley, and one-quarter of the oats. This will give as the amounts actually destroyed by these insects, 7,500,000 bushels of wheat; 500,000 bushels of barley, and, in round numbers, 3,300,000 bushels of oats.

If we make a cash estimate of this loss, by putting the price of wheat at one dollar a bushel, barley at 50 cents, and oats at 25 cents, we shall have an aggregate loss of upwards of eight and a half millions of dollars in the central third of the State of Illinois.

In this estimate we have made no account of the injury done to corn throughout the State, nor of the damage to small grains north of the central belt. Here the calculation becomes much more indefinite, but I believe it will be generally admitted to be a low estimate if we add, for this purpose, one-quarter part to the above aggregate of loss. This will make the total loss caused by Chinch-bugs, in the State of Illinois, in the year 1871, upwards of ten and a half millions of dollars.

If we assume an equal amount of loss for the two States of Iowa and Missouri combined, and another equal amount for the four States of Indiana, Kansas, Nebraska and Wisconsin, we shall have a total loss in one year, in the Northwestern States, of upwards of 30,000,000 of dollars, from this one species of insect.

In consideration, therefore, of the enormous loss caused by the Chinch-bug in the past year, and the well-founded apprehensions for the year to come, every observation which can throw any light upon the history and treatment of this formidable insect, becomes of the greatest interest and importance. So much, however, has already been written upon the general history of this insect, that we shall confine ourselves, at the present time, to the practical treatment of the subject, especially in the light of the experiences of the past season.

The methods and agencies for the destruction of these insects, or for the prevention of their excessive multiplication, may be reduced to the following:

1st. Their natural enemies.

2d. The plan of anticipating their ravages by sowing grain so early, in the spring, as to get in advance of their depredations.

3d. The attempt to save a part of our crops by preventing the migration of the bugs from one field to another.

4th. The method of destroying them by burning corn stalks and other rubbish, in the fall of the year.

5th. The attempt to prevent their breeding, to any serious extent, by abstaining from the cultivation of those grains upon which they chiefly subsist.

FIRST.—THEIR NATURAL ENEMIES.

With respect to the destruction of Chinch-bugs by natural enemies, the testimony on record is extremely meagre and unsatisfactory. Lady-bugs are sometimes found in company with them under corn husks and in other sheltered situations, and this circumstance, taken in connection with the fact that these are predaceous insects, has led most of our writers upon practical entomology to enumerate them amongst the destroyers of Chinch-bugs, but I can not learn that any one has actually seen them devouring these nauseous insects.

The larvæ of the Lace-winged flies sometimes feed upon them, as has been proved by the observations of Dr. Shimer. But it is only occa-*sionally* that the Lace-wings are seen where Chinch-bugs abound, and they are nowhere numerous enough to make any perceptible impression upon their multitudinous hosts. It has been said that quails will eat them, but this seems to rest upon a few imperfectly attested statements, passed down from one to another, rather than upon actual and repeated observation. I do not wish to be understood as denying the truth of the statement; but if there is any reliable testimony upon this subject, it has escaped my search. At any rate, I believe, that for all practical purposes, any hope of essential aid from natural enemies, in the de*struction* of Chinch-bugs, may as well be thrown wholly out of the question.

SECOND.—THE PLAN OF SOWING GRAIN SO EARLY IN THE SPRING AS TO GET IN ADVANCE OF THEIR DEPREDATIONS.

The well-known fact that winter wheat generally matures before the young brood of Chinch-bugs makes its appearance, and thus escapes their ravages, naturally suggested the idea that the same end might be accomplished with respect to spring wheat, if the seed could be got into the ground very early in the spring. However plausible this supposition may appear, the experiences of the past season would seem to show that any reliance based upon it must prove, in a great measure, fallacious. Notwithstanding that the last spring was dry and favorable for the early sowing of grain, and notwithstanding that it is universally understood by farmers that the earlier wheat can be sown the better for the crop, and therefore it may be presumed that wheat was sown unusually early, yet the result could scarcely have been more disastrous. I am not prepared to say that nothing can be gained by this course, but in view of the experiences of the past season, I do not see how we can place much reliance upon this method of escaping the ravages of the Chinch-bug.

In this connection we may advert to the plan of sowing certain stimulating substances, such as salt and lime, with the seed, for the purpose of hastening the growth and the ripening of the grain. It has also been supposed that a pretty heavy dressing with such materials might render the soil obnoxious to the bugs. I have known of attempts being made to protect corn from the bugs, by the application of salt and air-slacked lime, but without any visible effect, and it is not probable that any quantity of such substances which we could reasonably apply to the soil would be effective in preserving our crops from these insects. But in the other point of view, that of hastening the ripening of the grain and thus placing it in advance of the depredations of the bugs, this plan seems to me to be well worthy of trial. I was informed by a farmer living in Dixon, that he had tried sowing salt with his spring wheat, at the rate of one barrel to two and a half acres, and that upon the part of the field so treated, the crop was much larger than on the other portions, and ten or twelve days earlier. The effects of salt will differ, of course, to some extent, like all other applications, according to the nature and condition of the soil.

THIRD.—THE ATTEMPT TO SAVE A PART OF OUR CROPS BY PREVENTING THE MIGRATION OF THE BUGS FROM ONE FIELD TO ANOTHER.

It is well known that when the small grains become too mature and dry to afford nutriment to the Chinch-bugs, they migrate in vast numbers into the adjoining cornfields, and generally destroy from half a dozen to a dozen or more of the outer rows, and nothing but the great extent of these fields, at the West, and the exuberance of the plants, which, at this time, have nearly completed their growth, preserve the corn crop from the same destruction which has overtaken the smaller grains.

As this migration takes place before the young brood have acquired wings they necessarily travel on foot, and various attempts have been made to intercept their progress. The principal of these are a succession of furrows plowed across their path, and a barricade of fence-boards besmeared with coal tar or kerosene oil. The first plan, though but very partially successful, is so simple and easy of execution that it is always worthy of trial. I was informed by some of the farmers who practiced it the past season, that it very materially checked their progress for the first day or two, so long as the furrow was fresh and the earth friable; but that a shower of rain or heavy dews for a succession of nights, so consolidated the earth that the insects could pass over.

The other plan is much more effective, but also much more troublesome and expensive. It consists of a barricade of fence-boards, placed end to end, and set edgewise into the ground, with the upper edge besmeared with some offensive substance, the one most commonly used being coal tar. This method has been extensively resorted to, the past season, in the central part of the State, and especially in the neighborhood of the Bloomington gas works, where the coal tar is extensively manufactured. I was informed by one of the proprietors of the gas-works that nearly one hundred and fifty barrels of tar had been purchased at that establishment for this purpose. I had an opportunity of seeing this method put in practice, on a large scale, on the farm of Mr. Joshua Sells, of Bloomington. At the time of my visit Mr. Sells had discarded the boards as an unnecessary trouble and expense, and had adopted the simpler and more expeditious plan of running a stream of tar, from the spout of an old tea-kettle directly upon the ground, along the exposed sides of his cornfields. He found that a gallon of tar would extend about ten rods, so that a two-gallon kettle, twice filled, would furnish a strip of tarred ground the whole length of a forty-rod cornfield. The tar had to be renewed every other day, and oftener in case of rain. The insects would crowd up to the line in such numbers, that in many places they would pile up from half an inch to an inch deep, and could be scraped up by the double handful. But so long as the tar was kept fresh not a bug would cross it. They were not prevented from crossing by the adhesive nature of the tar, but by its repulsiveness. The bugs would not touch it. They were destroyed by conducting them into perpendicular holes, or by shoveling them in and burying them. The usual price of coal tar at the gas-works is about two dollars a barrel. This is the most effective means yet resorted to for intercepting the progress of these insects when in the act of moving from one field to another; but the trouble and expense of using it, especially at a distance from the places where the tar is manufactured, will probably prevent its ever being very generally practiced. The great deficiency of all such methods, as a remedy for the chinch-bug, is that, at best, they only protect that crop which is usually the least damaged by them.

FOURTH.—THE METHOD OF DESTROYING THE INSECTS BY BURNING CORN-STALKS AND OTHER RUBBISH IN WHICH THEY ARE SUPPOSED TO HIBERNATE.

We have just adverted to the fact that when the small grains fail the Chinch-bugs migrate into the corn, and that at this time they travel on foot and confine themselves mostly to the outer rows. But shortly after this, the young bugs acquire wings and then spread themselves over the field in large flocks. It is a question of considerable importance, and one to which but little attention has been paid, whether these insects materially damage the corn crop after this general scattering of themselves, in the latter part of summer. From the circumstances of the case, this question does not admit of a very easy solution. The fact that insects require comparatively little nutriment after they have attained their winged and mature state, taken in connection with the vast extent and luxuriance of the western cornfields, and with the additional consideration that the crop, being at this time considerably advanced, the loss would be only comparative, and therefore not easily discriminated; all this tends to involve the subject in much uncertainty.

Mr. George W. Patten, of Delavan, in Tazewell county, at whose house I visited in the hight of the Chinch-bug season, actively co-operated with me in the determination of this and other matters appertaining to these destructive insects. Mr. Patten took the pains to visit many of the farmers in his own and the neighboring counties, all of which were badly infested, for the purpose of making inquiries upon this point. He found it to be the general opinion that the bugs had damaged the crop very sensibly. As the whole State has suffered severely the past season, for the want of rain, there was the additional difficulty in this case, of distinguishing between the effects of the drouth and that caused by the bugs. The insects themselves, however, furnished a key to the solution of this difficulty, by virtue of their gregarious habits. It appears that they do not scatter themselves indiscriminately over the field, but that they move in large flocks, not unlike their fellow depredators—the blackbirds. Accordingly the cornfields are found to be damaged in patches, and it was thought to a sufficient extent to materially diminish the crop.

This general diffusion of the chinch bugs over the cornfields after midsummer, taken in connection with the common observation that they remain there till late in the fall, has naturally suggested the expediency of gathering the stalks together and burning them, after the corn has been harvested, with the view of destroying the bugs. It has also been advised, in order to make the remedy more sure, to burn the dead grass and other rubbish which accumulates around the borders of fields and fences. My own observations have led me to the conclusion that this remedy, also, in the way that it would be likely to be generally put in practice, can be of but little avail. Upon examining an infested cornfield late in October, I found that the bugs had left the upper part of the stalks and had collected about the one or two lowermost joints, under the sheaths of which they were congregated. They had gone thither, partly perhaps to avoid exposure to the cold winds of approaching winter, but chiefly, no doubt, for the sake of the nutriment which they could still extract from the lower joints of the stalks after the upper ones had become dead and dry. Upon visiting the same field a month later (Nov. 22d), after winter had virtually set in, the mercury standing 15° above zero, and the ground whitened with snow, after cattle had had the range of the field, very few bugs could be found. A few were found in deep cracks in the stalks, and a few were lying torpid upon the ground close to the roots of the corn. Upon digging up a number of hills no bugs could be found beneath the surface. Where the great majority of them had gone was not apparent. It is known that some of these insects hibernate under boards and flat stones, lying loosely upon the ground, and similar situations. Dr. Shimer found many of them under the fallen leaves of apple trees, but nearly half of these were dead. I have heard of their being seen flying in flocks, towards the woods, late in the fall. I cannot vouch for the truth of this, but I found them, this fall, in small numbers, under the loose bark of prostrate logs, in the edge of the woods, half a mile from any tillage land. I also found them congregated on the under side of some flat stones, lying upon stubble land. Within a few rods from them was a ravine filled with long dead grass, but I could find no bugs amongst the grass. It is proper to say, however, that this last was not a badly infested locality.

With the view of obtaining further observations upon this part of the subject, still later in the season, and especially in the badly infested district, I wrote to my friend Mr. Patten, whose assistance I have above been happy to acknowledge, and requested him to examine some of the cornfields in his vicinity. From Mr. Patten's reply, under date of December 20, I extract the following valuable observations:

"Since the receipt of your letter, I have at different times examined corn stalks with a view to finding Chinch-bugs, but have not succeeded in finding a live one. I have a piece of ground sown to fall wheat, from which I had carried what few stalks of corn the bugs had left standing, and had thrown them in heaps along the edges of the field. These heaps I have been examining, and have always found large numbers of dead bugs, but no live ones. To-day it occurred to me that perhaps by bringing them into a room of proper temperature, they might shows signs of life; but after giving them a fair test, I have been unable to bring any to life. In all shocked corn that was put in shock before the frost killed the corn, I find large numbers of dead bugs, from the ear down. In later cut corn they do not seem to be so numerous. In the stalk fields I find very few bugs, either dead or alive. To-day I chopped up stalks by the roots, examining each sheath, from the ground up; then opened the stalks, both sound and and fractured ones, but found nothing that could be recognized as ever having been a Chinch-bug. That the bugs disappeared from their usual haunts upon the approach of severe cold weather, I am fully satisfied, but where they now are I have failed to ascertain. The first thought is that they have gone below the surface of the ground; but when we consider that our cold weather came so suddenly upon us that the first night the ground was frozen to the depth of three or four inches, it hardly seems possible that the Chinch-bugs could have penetrated it."

Mr. Patten made the following curious observation bearing upon the hibernation of these insects:

"About the time of our first frosts, while gathering hazel-nuts in the timber, I observed that in nearly every instance where a nut had been bored into by an insect or grub, from one to four Chinch-bugs had found their way into the nut. Whether they were there for winter quarters, or were feeding upon the partly consumed nut, was a question which I could not solve."

Mr. Patten concludes his letter with the following practical remark: "As to burning the stalks with a view to destroying the Chinch-bugs, I have but little faith in it. Could the stalks be burned before excessive cold weather sets in, very probably a large portion of the bugs could be destroyed, but by the time the corn can be harvested, and the stalks are dry enough to burn, the Chinch-bugs have taken to their legs or wings, and left for parts unknown."

What strikes us as remarkable in these statements of Mr. Patten is that all the Chinch-bugs which he discovered appear to have been dead. The question arises, did they die a natural or an unnatural death? Had they arrived at the natural term of their lives, or were they killed by the sudden accession of cold weather, or by some other and unknown cause? As many of these insects were found in tolerably well protected situations, that is, under the sheaths of corn stalks which had been laid in piles, it does not seem probable that they could have been killed by the first cold snap of winter. The most plausible explanation of the case that I can give, is, that these dead insects were the old bugs of the former broods which had arrived at the end of their natural lives, whilst the instincts of the new brood, which are to perpetuate the race in the succeeding year, had led them to seek out more secure and permanent retreats.

From all this we conclude that late in the fall, and when winter is about to set in, Chinch-bugs, like most other insects, seek secure and hidden retreats where they will not be exposed to the snows of winter, nor to the cold rains of the late fall and spring, and therefore that the burning of corn stalks or other loose rubbish, late in the fall, will destroy but a very small proportion of them. The only way to accomplish this end, to any considerable extent, would be to husk the corn as early as possible, and then cut off the stalks close to the ground, and burn them. But even here it is very questionable whether the bugs would not leave the stalks before they were dry enough to burn. But in any event, the plan is scarcely available in actual practice. In the first place, most farmers depend upon their stalks for fall feed for their cattle; and if a farmer should conclude to sacrifice his stalks for this purpose, it would insure him no immunity from the inroads of the insects in the spring, from surrounding localities.

It may seem to be poor encouragement to show that the plans and preventives upon which we have been taught chiefly to rely, for checking the ravages of this formidable insect, are of so little real efficacy. But it is best to know the truth, and to see the evil in its true proportions. The first step to take, in meeting a real danger, is to divest ourselves of all false securities.

FIFTH.—THE PREVENTION OF THEIR BREEDING TO ANY SERIOUS EXTENT, BY ABSTAINING FROM THE CULTIVATION OF THOSE GRAINS UPON WHICH THEY CHIEFLY SUBSIST.

If then our supposed remedies for the Chinch-bug prove to be in a great measure fallacious; if experience shows that we cannot get our grain into the ground so early but that the bugs will be even with us; if plowed furrows and tarred barricades can only be resorted to when most of the mischief has been done; and if these insects hide themselves so securely, in the winter, that burning cornstalks and other rubbish can destroy, at best, but a very small proportion of them; and, finally, if their natural enemies are so few as to make no perceptible impression upon their countless hosts; then we are driven to inquire, with the more earnestness, whether we can take a step in advance of all these imperfect palliatives, and absolutely prevent the breeding of these noxious insects, to any serious extent, by abstaining from the cultivation of those crops which are most congenial to their nature. It may seem a hard alternative to give up the raising of some of our most valuable crops, at the behest of these nauseous *Hemiptera*, but a hard remedy is better than no remedy. It is better to save your labor and your seed, than to lose seed and labor and harvest likewise.

What then does experience teach us with regard to the breeding habits of these insects, and the plants upon which they mostly subsist?

When the warmth of spring has become sufficiently confirmed to penetrate the hidden recesses where insects hibernate, many different species which have wintered over, in the winged state, are seen emerging from their retreats, and launching out upon the vernal air, apparently rejoicing in their new lease of active existence. Amongst these, in the localities where they prevail, the Chinch-bugs are to be seen, flying in dense flocks, in search of the plants at the roots of which it is their instinct to deposit their eggs. Mr. Sells, of Bloomington, informed me that whilst plowing, about the first of May, his clothing and his horses were thickly sprinkled over with them, and that the horses were seriously annoyed in breathing by the bugs flying into their nostrils. These insects deposit their eggs at the roots of our cultivated cereals, and some of the grasses which most nearly resemble them. As the Chinch-bug is a native insect it must have subsisted originally upon the native grasses, before the cultivated cereals were introduced. The Chinch-bug was then a rare insect, only occasionally met with by collectors. Mr. Thomas Say, who spent twenty years in collecting and describing insects, in many parts of the United States and their Territories, first described the Chinch-bug, from a single specimen, and the only one which he had ever seen, and which was captured in the eastern part of Virginia. But there is no difficulty in getting specimens now. We have, ourselves, been the means of their excessive multiplication, by furnishing them with a superabundance of congenial food in the shape of our cultivated grains.

But the question now before us is, upon which of these grains do they thrive best, and will they thrive sufficiently upon all of them to multiply to a serious extent, or are they restricted in their food-plants to such a degree that we have it in our power to get rid of them, at any time, by abandoning the cultivation of some one or more of these grains.

It seems remarkable that these insects should make a selection between plants so similar, both in nature and appearance, as are the several species of what are known as the small grains. Yet abundant experience has taught us that they do make a very decided selection. It is known that they always give a strong preference to spring wheat and barley, where these are at hand. Where these two grains are not available, they will oviposit upon either of the others, and perhaps to about an equal extent. We know this from the fact that all of these grains are sometimes considerably injured, where Chinch-bugs abound, and the chief reason, probably, why winter wheat does not suffer as much as spring wheat, is that this crop gets nearly matured before the *new brood* of bugs makes its appearance; and accordingly, we sometimes see late pieces of winter wheat almost as much damaged by them as the spring wheat. But the main question is, whether, if no spring wheat or barley be raised, the Chinch-bugs will continue to thrive and multiply to excess upon any other kinds of grain. The general opinion is that they will not. And yet a sufficient number of exceptional cases occur to throw some doubt upon the matter, and to induce some farmers to hold the opposite opinion. Chinch-bugs are, in some years, found in considerable numbers in the southern part of this State, where the winter grains exclusively are raised. A number of cases, also, like the following, have come to my knowledge. Mr. D. Veatch, of Livingston county, stated to me that winter wheat, oats and corn, were all seriously damaged in his neighborhood, though but little spring wheat was raised; and on his own farm, a field of thirty six acres of oats was not worth harvesting, though no spring wheat had been raised in its vicinity for the last five years. And a somewhat similar case was related to me by a Mr. Vail, of Tazewell county. More definite testimony is needed upon this subject. My opinion, from my present knowledge, is that such cases are rare and exceptional, and perhaps would be easily explained if we knew all the circumstances.

From the foregoing observations we draw the following practical conclusions:

1st. That it is useless to attempt to raise spring wheat or barley where Chinch-bugs have been present in any considerable numbers the preceding year, unless we have reason to believe that they have been killed off by heavy rains in the breeding season.

2d. That in case the seasons should continue to be favorable to the propagation of the Chinch-bug, we always have it in our power to get rid of these pests by the abandonment of these two kinds of grain, for one or two years. But to make this course effective, there must be a concert of action by farmers over a considerable section of country.

3d. That the presence of Chinch-bugs the preceding year will not prevent the raising of corn or any of the winter grains.

4th. With regard to oats, the testimony thus far is that if this grain be sown where Chinch-bugs abound, and especially if it be sown exclusively, it will be damaged to a greater or less extent the first year, but that the bugs probably will not continue to breed in it to any great extent in succeeding years.

OTHER PROPOSED REMEDIES.

It may be proper, before closing, to advert briefly to a few of the more plausible of the other remedies for the Chinch-bug, which have been suggested.

It has been proposed to burn over the infested and ruined grain fields just before the time for the bugs to leave them, with the view of destroying the bugs and thus preventing their migration into the corn. This is a good suggestion, provided the grain is dry enough to burn before the bugs leave it; and also provided it will burn low enough to kill the bugs, which in this case would all drop to the ground. The plan would be most likely to succeed by the aid of dry straw, and favorable conditions of wind and drouth.

Another plan which has been proposed, is to sow a small proportion of winter rye (one bushel to twelve), with the spring wheat, with the expectation that the bugs would feed upon the green rye near the ground, whilst the more rapidly growing wheat would rise above it and come to maturity. This suggestion is founded upon the mistaken notion that Chinch-bugs feed upon the green blades of the grain, whereas they imbibe their nutriment, first from the roots, and afterwards from the lower joints of the stalk.

The well attested fact that Chinch-bugs are checked in their operations by rain, induced Dr. Fitch to advise the sprinkling of wheat fields—or at least those parts of them where the bugs first make their appearance—with water, by means of a garden engine, or some other contrivance. This would be an interesting experiment where the field is very small and the supply of water abundant; but we presume the Doctor would hardly recommend this plan as practicable on the forty thousand square miles of territory overrun this year by Chinch-bugs, at the West.

All attempts to check the depredations of Chinch-bugs, by throwing offensive substances upon them, such as tarred saw-dust, salt or lime, have proved to be labor lost. The recommendation of the salt application had the run of the newspapers the past season. Both this and the air-slaked lime were thoroughly tried by Mr. Sells, of Bloomington, without making any perceptible impression upon the bugs.

DESTRUCTION OF CHINCH-BUGS BY NATURAL AGENCIES.

This article would be incomplete without a brief reference to those natural agencies by which this destructive insect is kept in check. Unlike many of our noxious insects, such as the Plum-curculio and the Codling moth, which are permanent fixtures, the Chinch-bug seems to be subject to an irregular kind of periodicity, the causes of which are not fully understood. We have stated above that we have no reason to expect any efficient aid in the extermination of Chinch-bugs from their natural enemies. It is far otherwise with adverse climatic influences. We have already had occasion to refer to the important fact in the history of this insect, which has been established by repeated observation, that cold rains, or a succession of heavy showers, especially in the month of June, when the insects are small and immature, are fatal to them; and, therefore, that no fears of Chinch-bugs need be entertained for a number of years succeeding a summer of this character. It is an unsettled question whether there are any other adverse influences by which the destruction of these insects, upon a large scale, is effected. Are they ever destroyed by the severity of winter, as well as by the rains of summer?

In the observations made upon these insects, in their winter quarters, by Dr. H. Shimer, in the winter and early spring of 1864–5, it appeared that all the bugs which had been overtaken by winter in exposed situations, especially if above the snow line, were found to be dead. Even of those which had found more secure retreats, under sticks of wood lying upon the ground, and under the fallen leaves of apple trees, from one-half to three-quarters were found to be dead in the spring.

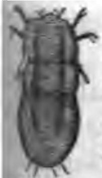
The observations of Mr. G. W. Patten, above recorded, were of the same character, but still more decisive. All the bugs found by him in the month of December—although many of them were in tolerably well protected situations, under the sheaths of corn-stalks which had been thrown in piles, were apparently dead, and that most, if not all of them, were really dead, and not merely torpid from cold, was proved by his experiments of bringing them into a warm room, and failing to resuscitate them. Now, the question is, what had caused the destruction of this large proportion of these insects? Were these the old bugs which had lived through the preceding winter, and which were now dying off—having fulfilled the ends of their existence? The analogy of insects, in general, would lead us to believe that the bugs of the former year perish much earlier in the season, soon after having deposited their eggs, and, therefore, that these were the bugs of the present season. We have not at present the requisite knowledge to discuss this matter satisfactorily. We only refer to it as an interesting field for future inquiries. Perhaps the key to the whole question will be found in the fact that the Chinch-bug is more a southern than a northern insect. Their ravages were recorded in Virginia and North Carolina many years before they made their way into these more northern sections. It would seem highly probable, therefore, that our northern winters must be incongenial to their natures, and often fatal to them. If this be so, we may expect that after a very cold winter, or even one of ordinary severity, but where there has been a scarcity of snow, the Chinch-bugs will have been so far destroyed as to be harmless for a number of succeeding years. And yet, the general fact that Chinch-bugs do survive our northern winters to a ruinous extent, is too patent to permit us to base our conduct upon any such speculations as the above, unless the truth of them shall be confirmed by future observation. The experience of the next year will be very interesting, in this point of view, more especially as the past summer has been a very dry one over a great part of the western country; and, therefore, if Chinch-bugs prove not to be destructively numerous next year, we shall be forced to account for their destruction by the operation of some other cause than the summer rains, to which their sudden disappearance, in former years, has been exclusively attributed.

USEFUL PARASITES.

THE GRASSHOPPER PARASITE.

(*Atoma gryllaria*, n. sp.)

Class of ARACHNIDA. Family of ACARIDÆ.



During a visit at the residence of Mr. O. B. Galusha, at Morris, on the 26th of June, he called my attention to a vermilion-red parasite, which he had observed for a number of years, and which were attached to the underside of the wings of grasshoppers. Mr. Galusha had previously spoken to me of these parasites, but I had not before had an opportunity to investigate them. Three years ago the grasshoppers prevailed excessively in this section of country, and were very destructive to many kinds of vegetation. Since then they have been much less numerous, and the diminution of their numbers has been attributed to the operation of these parasites, which seem greatly to weaken their victim without directly destroying it. The grasshoppers, the present season, are not very abundant, and did not appear to be much infested with parasites, though most of the fully-grown ones which we examined, had a few parasites attached to their wings. Subsequently, I examined grasshoppers in my own neighborhood, and found them equally, and some of them more severely infested. Upon the wings of one of them I counted thirty of these parasites. Most of them had attained a pretty uniform size, being about one-thirtieth of an inch in length, but easily visible on account of their intensely red color, giving them the appearance of little bits of sealing-wax, or coral.

They are of an oblong, oval form, moderately convex and having an uneven surface, produced by four shallow depressions on the upper side, the two larger near the middle, and the others behind them. The body has also two slight constrictions, giving it the appearance of being divided into three segments; but the impressions are superficial and only visible at the sides. The whole surface is finely striate, under the microscope, the striæ running in a waving transverse direction. The mouth-organs appear to be reduced to their minimum of development. The only part visible, externally, is a minute papilla, on each side of which are two bristles, the inner of which is stouter, tapering to an acute point, and curved inwards, or towards its fellow of the opposite side. They differ from the majority of acarides in having but six legs, and these, being of but little use in so stationary a creature, are short and slender, projecting but little beyond the outline of the body. They are six-jointed, garnished with short stiff bristles, and terminate in two slender curved hooks. The anterior and middle legs are closely approximate and situated near the anterior extremity of the body; the posterior are set a little nearer to each other, and a little in advance of the middle of the body, being inserted at the posterior part of the anterior division or lobe. Four hairs project from the posterior extremity of the body.

These parasites are found on the under side of the basal half of the inferior or true wings, and adhere with such tenacity that it is difficult to scrape them off with the point of a penknife. They appear to adhere by their mouths and not by their claws.

The acari of this country have been but little studied, and scarcely anything has been done in the way of classifying them, or reducing them to their proper genera. The present species appears to belong to the division of *Trombidia hexapoda*, of Hermann, and to the genus *Atoma**, of Latrielle, chiefly characterized by the imperfect development of the oral organs.

The species of grasshopper which these parasites were found infesting at Mr. Galusha's, was the common red-legged grasshopper (*Caloptenus femur-rubrum*, of De Geer). They are stated in the American Entomologist to have been also found on the allied species so destructive west of the Mississippi river, and called by Prof. Uhler and Mr. Walsh, the *Caloptenus spretus*. The grasshopper upon which I found them so numerous, in my own neighborhood, was also a common but much larger species, the specific name of which I neglected to determine. It is probable, therefore, that they will be found infesting many different species of grasshoppers, and I have accordingly appropriated to them the specific name *gryllaria*, indicative of this tribe of insects.

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*This is the generic term applied to these mites in the "Régne Animal." The word *Astoma*, meaning *mouthless*, would have been more characteristic, and might be supposed to have been the word intended, were it not that this latter term is appropriated, in the same work, to a genus of radiate animals in the class Acalepha.

NOTES OF THE SEASON.

THE LESSER APPLE LEAF-FOLDER.

(*Tortrix malivorana*, LeB.)

A brief account of this insect was given by the writer in his first annual Report. We refer to the subject now merely to add that the apprehensions which were naturally entertained of its increase and diffusion, have not been realized in the experience of the present year. Whether it be that they have been destroyed by natural enemies, or what seems more probable, in the absence of any known enemies of this kind, that they are very susceptible to the vicissitudes of the weather, it is a gratifying fact that the hosts of last year have entailed a very scanty progeny upon the present. I visited Mr. Wier's place this season, at about the time of my last year's observations, and though there were marks of damage by the early spring brood, the second brood seemed, for some reason, to have proved abortive. I could find but few specimens, and the nursery trees had made a good growth and presented none of the blasted aspect which they exhibited the previous year.

OYSTER SHELL BARK-LOUSE.

(*Mytilaspis conchiformis.*)

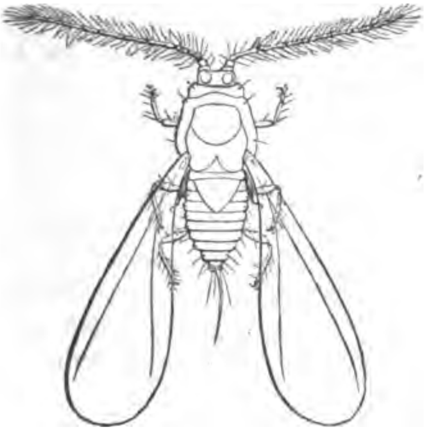
In treating of the remedies for the Apple Bark-louse, in the author's last Report, reference was made to the various applications which have been used for the purpose of destroying the eggs under the scales, it being very desirable that some such remedy shall be found, inasmuch it can be applied in the early spring, when the farmer is more at leisure, and when the foliage, being yet in the bud, is not exposed to injury.

It was further remarked that experience had shown that very strong applications, such as undiluted soft soap, failed to destroy the vitality of the eggs under their protecting shield; but that simply greasing them over was fatal to them, probably by closing the pores and thus excluding the air. The question then naturally arose whether greasy applications would be injurious to the tree, and it appeared that the published testimony upon this subject is quite conflicting.

At the time of writing that article the season had gone by for experimenting in this matter; but in the spring which has since intervened (1871), I performed the following experiments for the purpose of further testing this point.

On the 30th of March, the buds not having yet expanded, I selected six thrifty five-year-old apple trees, of three different varieties, and applied to two of them simple lard, greasing over every part of the trees, trunk, branches and twigs. To two others kerosene oil was applied in the same manner. To the other two linseed oil was applied; but in this case, to vary the experiment, the terminal twigs were omitted. None of these trees were eventually damaged by the applications. Upon those to which the lard and the linseed oil were applied, no effect was perceived. They leafed out as early and looked as well as other trees standing beside them. The kerosene, as might have been anticipated, acted more severely. It killed or seriously damaged all the first buds, and the trees were several weeks later in leafing out than the others, but at an examination of them on the fifth of July, no difference could be seen in the quantity or healthiness of the foliage, from that on the other trees. One effect of the kerosene is deserving of notice. The check thus given to one of these trees had an effect similar to girdling or root-pruning, namely: that of throwing it into premature bearing—this tree producing an apple though still standing in the nursery row.

In further illustration of the effect of greasy application to apple-trees, I will add that Mr. James Crotty, an intelligent Irishman, in whose nursery the above experiments were performed, stated to me that when he lived in Ireland it was a common practice to annoint with linseed oil apple-trees large enough to bear, but which were growing too much to wood. The whole tree was annointed except the smallest twigs and fruit-spurs. The effect was to check the growth of the tree and put it into a bearing condition. The operation was not supposed to permanently injure the trees.



THE PINE LEAF SCALE-INSECT.

(*Mytilaspis Pinifolii*, Fitch.)

The natural history of this insect was given at some length in the author's first report. As it belongs to the family of Bark-lice (*Coccidæ*), but is in this case stationed upon the leaf, I distinguished it from its congeners by the English title of the White Pine Leaf-louse. But as the term Leaf-louse is usually restricted by entomologists to the various species of Aphides, I have here restored Dr. Fitch's name, which is free from this ambiguity.

My object in referring to this insect again is, to fill out a part of its history which my observations last year were made too late to determine. I refer to the time of hatching of the first or spring brood. In the former report, judging from what was known and from the analogy of allied species, I stated that the spring brood would probably be found to hatch in the month of May. The observations of the last spring show this conjecture to have been correct. It appears from my note book that the eggs were generally found hatched on the 25th of May, but not so early as the 10th, in my own locality or the latitude of Chicago. Happening to be at South Pass, in the southern part of the State, on the last of May, I found the new scales about half grown, so that it appears that the hatching of the first or spring brood of this species corresponds very closely with that of the first and only brood of the allied Bark-louse of the apple-tree.

The coccus of the pine, like that of the apple-tree, and I might add, also, like several species of the allied aphides, is first found on the lowest branches of the infested trees. This suggests the idea of cutting off and burning these branches, as one important step in eradicating the insects. A handsome Scotch pine in one of my neighbor's yard, upon which I made many of my observations, has been treated in this way, and the Lady-bugs having been busy at work upon the remaining branches, the tree is now almost free from its destructive parasites.

Owing to the absence of the author at the time of the printing of the second edition of the first report, the highly magnified figure of the male of this species, which was there referred to, was omitted. I have therefore had it prefixed to the present notice. In order to show clearly the characters of this insect, which is of much scientific interest, it has been drawn very greatly magnified. The insect itself is very minute, being only about one fiftieth of an inch in length.

THE COLORADO POTATO-BEETLE.

(*Doryphora*, 10-*lineata*, Say.)

Supplementary to the Author's article upon this Insect in his First Report.

The experiences of the past season, with regard to this comparatively new but now widely known noxious insect, have been remarkable, and not satisfactorily explained. It was the general report, especially in the northern parts of Illinois and Indiana and the southern parts of Wisconsin and Michigan, that these insects made their appearance in the spring in greater numbers than ever before, and it was the general impression that the potato crop was doomed to destruction. As the season progressed the reports became more favorable, and the result has been that a tolerable crop of potatoes has been harvested, notwithstanding that it also had to contend with drouth as well as insects, in the latter part of the season. Any one may obtain sufficient testimony to the accuracy of this statement, by reading the unfavorable reports of the National Department of Agriculture, for the months of May and June, and comparing them with the faverable and hopeful accounts of this crop in the same series of reports for the month of July. This favorable change was attributed partly to persistent hand-picking and the free use of Paris-green, and partly to the increased numbers of the natural enemies of the Potato bug, especially the Armed Soldier-bug (*Arma spinosa*), which destroys the Potato-bugs mostly whilst in the immature state, by puncturing them and extracting their juices, and the Many-spotted Lady-bug (*Hippodamia maculata*), which checks their increase by devouring their eggs. But there have been reports, from many localities, of a diminution in the numbers and destructiveness of these insects beyond what these agencies would account for. It was a common remark, after the season was somewhat advanced, that the Potato-bugs were not nearly so bad this year as they were the last. In the Agricultural Reports for July were such items as the following:

"Lapeer county, Michigan.—The potato crop looks fair. The old bugs have nearly disappeared; the young ones may yet do some damage."

"Green Lake county, Wisconsin.—Bugs leaving. They have left a few eggs and some young bugs, but the latter are doing no harm. The crop looks well."

"Howard county, Indiana.—The Colorado-bug has almost disappeared."

"Benton county, Minnesota.—Colorado-bug disappearing. Old ones have about all gone; the young ones do not seem to thrive as in previous years."

Now, these may have been exceptional cases, or rather exceptionally strong cases; but taken together and in connection with other observations, which we have not here space to record, they seem to intimate pretty clearly that the Colorado-beetle is not exempt from the operation of those general and imperfectly known laws or conditions which are known to affect other insects, and which cause them to be comparatively rare one year and abundant another. A curious paralellism may be traced between the inroads of noxious insects and the prevalence of epidemic diseases, both being much more virulent and destructive in the earlier than in the later periods of their prevalence.

If this view is correct, it gives us reason to hope that though this destructive insect may not become wholly exterminated, it may nevertheless cease, in a few years, to be the terrible scourge that it has been for the five or six years last past.

As the Colorado-beetle originated from the far West, and has been steadily progressing eastward, the question has been anxiously asked by agriculturists, whether, in proportion as these insects overrun new territory, they will subside in the sections first attacked. The experiences of the past year go far to answer this question in the affirmative. Whilst the most disastrous reports have come from the more recently invaded States of Indiana and Michigan, the State of Iowa, which these insects ravaged for a year or two before they crossed the Mississippi

River, has been comparatively exempt, and the potato crop has been good, especially in the northern counties.

With respect to that popular remedy, the Paris-green, there is with many people a natural disinclination to the free use of so virulent a poison. This repugnance is founded not only upon its dangerous qualities, but also upon a lurking suspicion that its constant use is injurious, though not absolutely poisonous, to the potato. It is more probable that the imperfect quality of the potatoes, where much Paris-green has been used, is owing to the general damage of the plants, both by the insects and the remedy, rather than to any specific poisonous influence of the latter. But, be this as it may, it is undoubtedly true that potatoes which are known to have been raised without any contact of the plants with Paris-green, will command a more ready sale in the market than those which have been produced by its use.

The natural wish to raise potatoes without the use of poisonous applications, has led to a variety of experiments for the purpose of capturing and destroying potato-bugs by machinery. One of these machines, which has the important merits of simplicity and cheapness, has been gotten up, the past season, by Mr. George Squires, a successful farmer, residing near Aurora, in Kane county. Having had an opportunity to see this machine, and to converse with Mr. Squires concerning its use, I will briefly describe it. It may be stated, in general terms, to be an oblong shallow box, which is drawn by a horse between the rows, whilst the bugs are knocked into it by brush or paddles working at the sides. It is constructed something in this wise: First, a plain board platform or drag is made, six feet long, and two and a half feet wide, coming within three inches of the vines on either side, the potatoes being planted in rows three feet apart. Upon this are set four posts, one at each of the hind corners, and the other two four feet in advance of them. To these posts the side and end boards of the box are nailed, the sides being four inches and the ends about eight inches high. This leaves two feet in front of the box which serves as a platform on which the driver stands. The posts may be made of two-by-four scantling, though it is not necessary to have them so thick. They are two feet high, and set a little flaring so as to bring their tops over the middle of the rows. They are set with their flat sides facing fore and aft, or towards their fellows on the same side. Two inches from the top an augur hole, an inch and a half in diameter, is bored. From the top of one post to that of the other, on the same side, extends the revolving bar, about three inches in diameter, its ends being narrowed so as to enter the holes in the posts. Through this bar, a few inches from each end, an oblong square hole, or mortise, is cut, through which the arms pass, to the ends of which the flapper is attached, as seen in the figure. The flapper is a piece of thin board, a piece of siding for example, which is nailed to the ends of the arms. The arms are so arranged as to slide by each other in the mortise, and in this way the flapper can be raised or lowered according to the hight of the vines. The bars, with their flappers, are made to revolve by a crank attached to the forward end of the near, or left hand bar, and is turned by the driver. The forward end of each revolving bar passes through a pulley wheel, about seven inches in diameter, a band passing from one to the other, and crossed so as to make both bars revolve inwards.

In cultivating a few acres, the machine may be simply dragged along upon the ground. But as Mr. Squires raises from twenty to thirty acres of potatoes yearly, he attached the machine to the forward wheels of a light wagon, suspended by a chain to the axle-tree, so that the forward end of the drag barely touched the ground, and thus greatly facilitated the draft. The driver sits upon the axle-tree, with his back to the horse and his feet upon the platform, and turns the crank, sitting a little sideways so as to direct the horse at the same time.

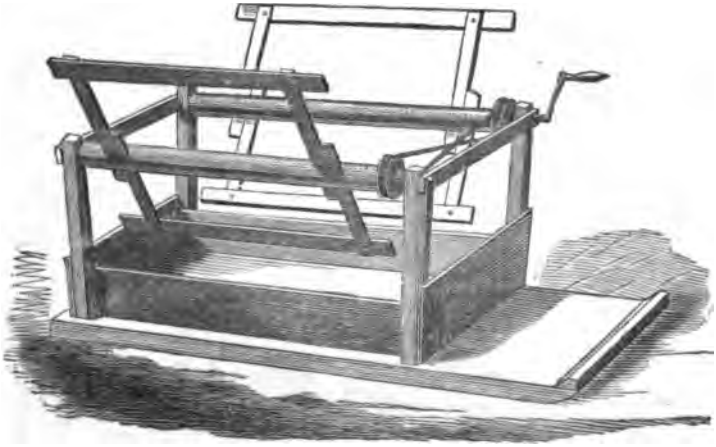
In answer to questions put to Mr. Squires, the following additional information was obtained:

The machine was made in less than half a day, and did not cost over four dollars. Those who used it were the only ones in that neighborhood, with one exception, who harvested any potatoes. Mr. Squires had sold a thousand bushels of potatoes at a dollar a bushel, and had half as many more left. The machine operates most successfully upon vines from four to twelve inches high. It knocks off nine-tenths of the beetles and larger grubs, but does not remove many of the very small ones. A man can easily go over fifteen acres a day, and he had once bugged ten acres in half a day. The potatoes being on ridges, the machine drops a little below them, and this explains how bugs can be knocked from vines only four inches high into a box of the same hight. In answer to the question whether it would not be a good plan to line the box with zinc, to prevent the bugs from crawling out, Mr. Squires replied that the bugs do not attempt much to crawl out of the box. The blow which knocks them in, partially stupifies them for a time, and the continual whipping in of the vines by the flappers tends to knock them back. If many of them are attempting to crawl out at any time, they can be jarred down by a sharp rap on the sides or ends of the box.

The bugs are disposed of by burying them in perpendicular holes, covering them with a foot of earth and stamping it down. At first Mr. Squires thought it necessary to kill the bugs, and drenched them with strong lime-water, but he found this to be unnecessary. The bugs thus buried, en masse, soon perish

We have not space for comments, but every reader can draw his own conclusions. The machine could, no doubt, be improved by experience and ingenuity. The one which we saw was a rough and cheap, but effective piece of work; but these are the very qualities which make it available to the common farmer, and which have appeared to us to justify this somewhat extended notice of it. If this machine proves as successful in the hands of others as it did in those of the inventor, it will supply an important need in potato culture upon a large scale.

The Paris green will still have to be used whilst the vines are small, or until they are four or five inches high, but at this time its application is very easy, and it requires comparatively little of the poisonous material; and we cannot too often reiterate that experience has shown that the Paris green may be, and ought to be very largely diluted, that is to say, with about twenty times its bulk of flour or lime, or other inert powder.



ERRATA IN FIRST REPORT.

Page 16, 14th line from top, for "larvæ" read "larva."
" 20, 3rd " " for "from" read "upon."
" 31, 5th " bottom, for "with" read "in."
" 46, 12th " " for "described" read "describes."
" 46, 15th " " for "follows" read "follow."
" 51, 8th " top, for "once" read "one."
" 57, 14th " bottom, for "close" read "closely."
" 57, 8th " " for "lying" read "flying."
" 88, 15th " top, for "immovable" read "immovably."
" 93, 10th " " for "of oyster" read "of the oyster."
" 96, 14th " " for "superiors" read "superior."

ANNUAL REPORT OF AUDITOR OF PUBLIC ACCOUNTS.

DECEMBER 12, 1870.

REPORT OF THE AUDITOR OF PUBLIC ACCOUNTS.

AUDITOR'S OFFICE, ILLINOIS,
Springfield, December 12, 1870.

JOHN M. PALMER, *Governor of Illinois*:

SIR:—I have the honor to submit the following report, for the fiscal year commencing December 1, 1869, and ending November 30, 1870.

You will find the following items embraced in the report, viz:

1. Statement of Receipts and Disbursements of General Revenue Fund.
2. Statement of Receipts and Disbursements of Special State Funds.
3. Statement of Receipts and Disbursements of Local Funds for payment of principal and interest on Bonded Indebtedness of Counties, Townships, Cities and Towns.
4. General Statement of Warrants drawn on the Treasury for all purposes.
5. Detailed Statement of Warrants drawn on the Treasury for all purposes, and to what account and appropriation charged.
6. Statement of the amount of Auditor's Warrants outstanding unpaid, December 1, 1870.
7. Statement of the School, College and Seminary Funds.
8. Statement of State Indebtedness redeemed with Illinois Central Railroad Funds.
9. Statement of State Indebtedness redeemed and purchased with State Debt Fund.

0. Statement of the Accounts of the State Treasurer with the several State Funds, and the County, Township, City and Town Interest (bond) Funds.

1. Statement of State Taxes charged in the several Counties, amounts collected, etc., for the year 1869.

2. Statement of the State School Tax Fund, for the year 1869.

3. Statement of the Dividends of School Tax and Interest Funds to the several Counties, for the year 1869.

4. Statement of the condition of State Banks.

5. Statement of County, Township, City and Town Bonds, registered in the Auditor's Office.

6. Statement of the aggregate assessment of property in the State, for the year 1870.

17. Statement, showing the rate per cent. of addition and deduction determined by the State Board of Equalization, on the assessment of the several Counties, for the year 1870.
18. Statement, showing the assessed and equalized valuations of the several classes of property for State taxation, for the year 1870.

TAXES LEVIED.

The appropriations made by the 26th General Assembly, as set forth in my last Annual Report, made it necessary to levy for the purpose of meeting the ordinary expenses of the State Government for 1870, and to provide for the payment of the very large deficiency caused by the appropriations aforesaid, a tax of eight mills for revenue purposes, and one mill for interest on the State debt—which, added to the two mills for payment of principal of the State debt, and the two mills for support of public schools, made a levy for State tax of thirteen mills, on the assessment of 1869.

I am glad to be able to say that the estimates made at that time are proved to have been correct, and that the treasury of the State has been for some time in a condition to pay all warrants when presented. With a few exceptions, the county collectors have been more prompt than they were last year, in paying over the tax when collected. But some little legislation will be required—and will be proposed—to enable the Auditor to enforce, when necessary, a faithful compliance, on the part of county officers, with the revenue law.

On the basis of the equalized valuation of property for the year 1870, I have levied a tax for State purposes, as follows: Two and one-half mills for revenue, which, in connection with the two mills for payment of State debt, and two mills for the support of public schools, makes the total levy for State tax on the assessment of 1870, amount to six and one-half mills; being just one-half of the levy of last year. It is proper to state, that but for the extraordinary expense occasioned by the session of the recent Constitutional Convention to frame the present Constitution, and the increased expense of the judiciary and other departments of State government, in consequence of the adoption of the new constitution, the levy might have been made still smaller. When it is remembered that the assessment of property in this State does not, in my opinion, exceed one-quarter of its actual value, it will be conceded that the tax for State purposes is not burdensome, as compared with the taxes of other States.

In making the levy aforesaid, I have only endeavored to provide a sum sufficient "to meet the current expenses for the coming year, and all known demands upon the treasury payable from revenue funds." In making this levy, I have estimated the expenses from June 1, 1871, to June 1, 1872, when the tax on the assessment of 1871 becomes due to the State Treasury. Section 18 of Article III of the Constitution, requires that the "General Assembly shall provide for all the appropriations necessary for the ordinary and contingent expenses of the Government, until the expiration of the first fiscal quarter after the adjournment of the next regular session, the aggregate amount of which shall not be increased without a vote of two-thirds of the members elected to each house, nor exceed the amount of revenue authorized by law to be raised in such time; and all appropriations, general or special, requiring money to be paid out of the State treasury, from the funds belonging to the State, shall end with such fiscal quarter." It is believed that the Revenue Fund now in the State treasury will just about suffice to meet the expenses of the government, until the tax of the next year, on assessment of 1870, becomes due and begins to be received; and by adopting the practice of estimating the annual expenses from June 1st to June 1st, instead of, as heretofore, from December to December, it is hoped that the treasury may always be in a condition to pay the ordinary and authorized expenses of the government, instead of having a time of about three months in every two years when warrants, drawn in pursuance of law, can be found floating in the market with more or less depreciation of value.

BALANCE DUE ON APPROPRIATIONS AND EXPENSES OF GOVERNMENT TO MAY 31, 1871.

There was due on the first of this month, to the appropriation of 1869, for building the New State House, the sum of $306,935 57, and to the appropriation of 1869, for Canal and River Improvement, the sum of $227,696 42. The pay of members and officers, and expenses, of the 27th General Assembly, will not be less than $350,000. The expenses of all the State Institutions, from the 1st of December to the end of the first fiscal quarter, after the adjournment of the General Assembly, (say May 31, 1871,) will not be less than $300,000. The salaries of Judges and Attorneys, and other expenses of the Judicial Department of the State government, will probably, for the time last named, exceed $110,000. For the same time, the salaries and expenses of the Executive Department, Printing, Binding and incidental expenses of the State government, both ordinary and extraordinary, under appropriations now in force, including warrants outstanding December 1, 1870, will not be less than $160,000.

The foregoing amounts make, in the aggregate, the sum of $1,454,631 99, being almost the amount of the Revenue Fund in the treasury on the 1st December, 1870.

Thus it will be seen that the amount of revenue now in the treasury ought not to be considered by the General Assembly, in making appropriations for the future, as its exhaustion is already provided for by the last General Assembly; and to base any further appropriation upon it, would simply create a deficit, to be hereafter provided for by an increase of tax.

REVENUE LAW.

It has long been felt by every intelligent revenue officer, State or county, that something should be done with reference to the revenue law. The State Board of Equalization, at its session in 1869, passed a resolution to the effect that the revenue laws ought to be codified and amended in some particulars, and appointing the Chairman and Secretary of that Board, a committee "to perform this labor, and to report the result to the next meeting of the Board."

Mr. Stadden and myself undertook this labor, all the more willingly, because we were ourselves convinced that the interests of the people and the government of the State demanded it. In order to ascertain the opinions of those who might be considered "experts" on this subject, we printed the earliest result of our labor in the form of a bill for a revenue law, and sent copies all over the State to such capable persons as we knew to be interested in the subject, and worthy of consultation. Of course many were omitted, whose advice we should have been glad to have, but from those to whom the first draft of the proposed law was sent, we received many valuable criticisms and suggestions.

When the Board of Equalization met on the fourth of October last, the report, with all the hints, criticisms and suggestions which had been received, was submitted to the Board, and a committee composed of gentlemen from every section of the State, was appointed to consider the report.

The result is a draft of a proposed "Act for the assessment of property, and for the levy and collection of taxes," which will be laid before the General Assembly at its approaching session. On some small details of that proposed revenue law, there may be differences of opinion, but I feel free to say that should the General Assembly make it the law of the State, without material alteration, it would be a very great improvement upon the present law, and an incalculable gain to the people of the State.

I desire here to acknowledge most heartily my obligations to Mr. William Stadden, for the able and careful assistance which he has given to the preparation of this proposed law, which I have no doubt is far better than it would have been but for his long and intimate acquaintance with the revenue system of the State.

APPROPRIATIONS FOR THE ERECTION OF STATE BUILDINGS.

I would respectfully suggest to you the importance of having som
check upon the expenditure of appropriations for the erection of buil
ings for State purposes, and for similar objects. I feel assured that th
Governor, Secretary of State, Auditor and Treasurer, elected as the
are to responsible and honorable positions by the people of the whol
State, are not likely to agree upon any expenditure of money which i
not fully warranted by law; and I would submit that it is scarcely pr
dent or proper to invest any but the constitutional officers of the Stat
with the power of *ordering* the drawing of warrants and payment
the same, without the approbation or concurrence of those intrusted b
the people, with such responsibility.

While it is no doubt often desirable, and even necessary, up
grounds of economy, to intrust considerable sums of money to t
officers of established State institutions, which require large expen
tures, there is as little doubt that there should be some check upon t
enthusiasm and zeal of those who may be selected to establish n
Institutions.

STATE BONDED DEBT.

The State has paid, on account of the principal of the bonded debt, during the fiscal year, ending November 30, 1870, as follows:

With State Debt Fund	$75,925 00	
With Illinois Central Railroad Fund	1,000 00	
		$76,925 00
The Trustees of the Illinois and Michigan Canal paid an installment on the principal of the registered Canal bonds, in Dec. 1869, amounting to		157,133 34
Making total amount paid on principal of State Bonds, during the fiscal year		$234,058 34

The following is an accurate statement of the bonded debt of the State, as it existed at the close of the fiscal year, ending Nov. 30, 1870:

New Internal Improvement Stock payable after 1870	$1,606,015 60
New Internal Improvement Interest bonds, payable after 1877	980,696 83
2 Internal Improvement Coupon bonds, payable after 1870	2,000 00
279 Bonds, Refunded Stock, payable after 1870	279,000 00
288 “ “ “ “ “ 1877	288,000 00
60 “ “ “ “ “ 1876	60,000 00
45 Normal University bonds “ “ 1879	45,000 00
102 Thornton Loan bonds “ “ 1879	102,000 00
222 $1000 War bonds “ “ 1879	222,000 00
255 $500 War bonds “ “ 1879	127,500 00
673 $100 War bonds “ “ 1879	67,300 00
19 $1000 Canal bonds, payable in New York in 1870	19,000 00
24 $1000 Canal bonds, payable in New York, registered, in 1870, bal	4,800 00
25 £225 Canal bonds, payable in New York, in 1870	25,000 00
20 £225 Canal bonds, payable in New York, registered, in 1870, bal	4,000 00
697 £225 Canal bonds, payable in London, in 1870	697,000 00
518 £225 Canal bonds, payable in London, registered, in 1870, bal	103,600 00
43 £300 Canal bonds, payable in London, in 1870	57,333 33
540 £300 Canal bonds, payable in London, registered, in 1870, bal	146,400 00
29 £100 Canal bonds, payable in London, in 1870	12,888 88
408 £100 Canal bonds, payable in London, registered, in 1870, bal	26,266 66
State bonds called in by Governor's proclamation, not yet surrendered	15,136 00
Total State Debt, outstanding Nov. 30, 1870	$4,890,937 30

To condense the foregoing figures, it shows that the bonded debt falls due as follows:

Bonds due in 1870	$1,096,288 87	
" after 1870	1,887,015 60	
		$2,983,304 47
" " 1876	$60,000 00	
" " 1877	1,268,696 83	
" " 1879	563,800 00	
		1,892,496 83
Bonds called in by Governor's proclamation, not yet presented		15,136 00
Total		$4,890,937 30

To meet the $2,983,304 47 in bonds falling due in and after 1870, there are funds in the State Treasury, applicable to the payment of said bonds, as follows:

State Debt Fund in treasury Dec. 1, 1870		$1,816,346 40
Illinois Central Railroad Fund in treasury Dec. 1, 1870.		765,757 82
		$2,582,104 22
Estimated amount of installment on gross receipts of Illinois Central Railroad for six months ending Oct. 31, 1870, now due	$260,000 00	
Estimated amount of State Debt Fund due on collectors' accounts, on assessment 1869, probable to be paid into State treasury during this month	180,000 00	
		440,000 00
Total amount of funds in the State Treasury, and estimated to be in the State Treasury, Jan. 1, 1871, applicable to payment of State debt		$3,022,104 22

The payment of the bonds now due, and to fall due after the close of the present year, will leave the bonded debt of the State outstanding, but not falling due until 1876, 1877 and 1879, $1,892,496 83. To meet this amount, I estimate that the two mill levy for payment of principal of State debt, on the assessment of 1870, being the last levy of said tax as provided in the present constitution, will produce the sum of $875,000 00. I further estimate that five semi-annual installments of the seven per cent. on the gross receipts of the Illinois Central railroad, commencing with the installment due April 30, 1871, and ending with the installment due April 30, 1873, at the rate of $460,000 per annum, will produce the sum of $1,150,000 00, which with the two mill tax before estimated, will make $2,025,000, being a surplus of over $132,000.

I have thus shown, that in 1873 the state will have in the treasury an ample amount to pay the entire outstanding bonded debt. To those who can remember the condition of the State of Illinois in 1847—her treasury empty; her Governor borrowing money on his own credit to pay the postage on the letters written on the business of the State, her bankruptcy known and sneered at all over the world; even her honesty of purpose doubted, and some of her own sons trying to bring her to the infamy of repudiation,—the simple statement of these facts and figures requires no comment to make them impressive. Who cannot see that, at least in the case of States and Nations, "Honesty is the best policy?"

I have made no estimate for premium on coin, being satisfied that the payment on the principal of the registered canal bonds, during the present month, by the Canal Trustees, will reduce the amount of debt now due to such an amount, as, with funds applicable to the payment of the State debt, certain to be received at the treasury before the bonds can be reached, will leave the treasury with an ample amount of State debt fund to purchase coin for the payment of the $2,983,304 47, less the amount paid by the Canal Trustees this month.

ILLINOIS AND MICHIGAN CANAL.

By reference to the figures accompanying my remarks in regard to the State Debt, it will be seen that on the 30th November, 1870, there remained unpaid $811,222 21 unregistered, and $285,066 66 registered Canal Bonds, making a total of $1,096,288 87, all of which fell due on the first of July, 1870. The only reason why this debt was not paid at that time was the want of authority for the purchase of coin, and the refusal of the bondholders to receive payment in anything else.

It is to be hoped that the General Assembly will take immediate action on this subject, and save to the State the interest on these bonds. With the money lying idle in the treasury there can be no economical motive for delay. The same remark will apply equally to the $1,887,015 60 which will fall due at the pleasure of the State after 1870.

With the payment of the $285,066 66 of registered Canal Bonds the Trust closes, the Canal and its revenues revert to the State, and no part of the property of Illinois will remain in pawn for the payment of her indebtedness and subject to the management of those who are not citizens of the State.

As an additional reason, if any were required, for the promptest action of the Legislature upon this subject, it may be recollected that an act approved Feb. 16, 1865, authorized the City of Chicago to "deepen the Summit division" of the Canal, and provided that any amount expended on said work "shall be a vested lien upon the Illinois and Michigan Canal, and its revenues, after the payment of the present Canal debt; and that the net revenues of the Canal shall thereafter be applied to the payment of the principal and interest of the same," "not to exceed two and a half millions of dollars."

Justice to the city of Chicago—now that the Legislature has mortgaged the Canal and its revenue to her—requires that she shall have the benefits promised at as any early a day as possible, and the time be thereby hastened when the State may not only manage its own property, but when its revenues will reach its own treasury.

STATE BANKS.

During the past fiscal year, the time fixed for redemption, by the Auditor, of notes of banks in liquidation has expired as to the following named banks, viz: Bank of Kewana and Producers' Bank. For further information concerning State banks, see Statement No. 15.

ACT OF APRIL 16, 1869, PROVIDING FOR THE PAYMENT OF THE RAILROAD DEBTS OF COUNTIES, TOWNSHIPS, CITIES AND TOWNS.

Under the influence of the law passed by the last General Assembly, styled "An Act to fund and provide for paying the Railroad Debts of Counties, Townships, Cities and Towns," two thousand miles of railroads have been built in this State since the adjournment of the last General Assembly, and are now in actual operation. In another place will be found a table showing the amount of the debt registered under that law. There is no doubt that the effect of the law has been very great in two ways:

First—It has encouraged the people to vote liberal subscriptions in aid of the construction of railroads under the impression that under the first section of the law each municipality creating a debt for building a railroad, would, on the completion of such road, receive back the State tax on the road itself, and the tax on any increased valuation of the property of said municpality over the assessment for State taxes in 1868.

Second—In consequence of the provisions in the said law for registering the bonds and collecting the tax required to meet the interest, and eventually, to pay the principal of bonds issued according to the provisions of the law, the bonds, when registered, have been readily sold at good prices, thus effecting the object for which the act was framed.

With regard to this second effect of the law, I suppose there can be no objection or regret. But the difficulties and embarrassments growing out of this return to the counties, townships, cities and towns, of the tax on the increase of assessment over that of 1868, are many and great, and it seems to be my duty to allude to some of them.

A practical difficulty, certain to occur whenever an assesment of property shall be honestly made according to law, may be stated thus: A railroad has been built running through a county, and a city and a township—all in the same county—and has received from each of these municipalities a subscription of bonds, say $190,000, and the bonds have been registered. It turns out that the city grows in population and wealth, so that the tax on the increased valuation of its property would amount to $10,000. The township (which may, and often does, include the city,) would in the same way show an increase, the tax on which would amount to $6,000; and the county, including the city and township, may have an increase of $4,000. In this case is there a possibility of carrying into effect the provision of the law?

The General Assembly cannot have intended to give away the same money twice. And if the city should get what the law seems to give it, there would not be a dollar left for either township or county. On the other hand, if the county and the township are paid what the law seems to give them, there would be nothing left for the city. If either of the three is entitled to anything, it is entitled to just what the law gives it. It cannot have been the intention of the General Assembly to promise more than it had to give, and then make composition with its creditors by paying so much on the dollar of what it promised. Nor would it seem a very dignified proceeding for an executive officer of the State to adopt the principle of "first come, first served" with the municipal claimants, and paying demands until the money is exhausted, let those who come last get nothing.

This is only a glance at one of the practical difficulties, of which there are several, which meet the Auditor in attempting to discharge his duties under the act.

Besides, I would submit that the constitution has that in it which seems to greatly interfere with the provision in regard to paying back to the counties, cities, townships and towns this tax on increased valuations of property. Without going into any argument I would refer to *Art. IV*, Sec. 17, which provides that "No money shall be drawn from the treasury except in pursuance of an appropriation made by law." And to sec. 18 of the same article, which provides that "all appropriations, general or special, requiring money to be paid out of the State treasury from funds belonging to the State, shall end" "with the first fiscal quarter after the adjournment of the next regular session of the General Assembly." These clauses, and their context, would seem, on their face, to be absolutely binding on the Auditor, even if Sec. 6 of Art. IX should be considered to have no reference to any law enacted before the adoption of the present constitution.

Under these circumstances, it is proper to say, that unless there shall be some action of the General Assembly, or some decision of the courts, that will make my duty in this regard more clear than it now is, I shall bear no part in returning to any municipality any part of the tax collected from a valuation greater than that on the assessment rolls of 1868. I scarcely think it necessary to say, but to prevent misconstruction I will say, that I have come to this determination from no desire to construe the law so as to defeat any of its purposes, but because, under all the difficulties and uncertainties of the case, and the danger there unquestionably is of doing great wrong if I should do anything, it has seemed to be my duty to all the people to do nothing until some competent authority shall decide the difficulty. Indeed, as I understand it, the Supreme Court decided the validity and constitutionality of the law awarding a similar tax to the American Bottom Improvement Company, mainly on the ground that it was *an appropriation* of State revenue. If the taxes which in this "Railroad debt law" are proposed to be given to the different municipalities should be so returned to them, could it be justified on any other ground than that they were appropriated to such uses by the Legislature? And if so, does not that appropriation cease at the end of the first fiscal quarter after the adjournment of the next General Assembly? But it is no part of my intention to argue the question, and I content myself with having partially stated the difficulty, and the determination to which a wish to discharge my duty has brought me.

In regard to the part of the same law which levies and collects taxes, and pays the interest on the bonds issued in aid of railroads, I will only say that in consequence of its existence, registered municipal bonds of every kind are more valuable than they otherwise would be, and to disturb it in any manner would, in my opinion, be a serious disaster.

CHARLES E. LIPPINCOTT,
Auditor P. A.

No. 1.

STATEMENT *of Receipts and Disbursements of the General Revenue Fund during the fiscal year commencing December* 1, 1869, *and ending November* 30, 1870.

RECEIPTS.		Amount.
From Taxes of 1867		$2,192 63
From Taxes of 1868		9,079 80
From Taxes of 1869		3,508,195 81
From redemption and sales of real estate purchased on execution		9,547 77
From judgment debtors		1,754 50
From sale of real estate in Jacksonville		5,700 00
From sale of property acquired from Joel A. Matteson		17,500 00
From Baring Bro's, London, England, on old State claim		12,986 65
From United States, reimbursement war expenses		52,397 69
From E. S. Salomon, County Clerk Cook court, fine in Supreme Court		1,000 00
Total Receipts for Revenue purposes		$3,620,354 85
DISBURSEMENTS.		
ORDINARY EXPENSES.		
Legislative Department	$1,538 68	
Executive Department	32,150 48	
Judicial Department	124,948 94	
Expenses of State Charitable and Educational Institutions	298,500 00	
Appropriations, General	3,911 31	
Conveying Convicts to the Penitentiary	26,447 60	
Commissioners of Public Charities	5,338 65	
Fugitives from Justice	4,306 42	
Field Notes and Surveys	711 92	
Incidental expenses of Secretary of State	20,634 00	
Printing, Binding, and Publishing Notices	46,439 27	
Porters in State House	5,367 50	
Repairs to State House	289 75	
State Board of Equalization	8,691 75	
State Library	6,767 85	
Total Ordinary Expenses		$571,044
EXTRAORDINARY EXPENSES.		
Building State Institutions	$288,041 68	
Canal and River Improvement	146,846 58	
Contingent Fund of Governor	7,038 70	
County Agricultural Societies	9,400 00	
Chicago Charitable Eye and Ear Infirmary	5,000 00	
Constitutional Convention	168,672 92	
Geological Survey and Reports	11,711 95	
Gross' Statutes	1,600 00	
Illinois Penitentiary	90,000 00	
Incidental Expenses of Secretary of State for Constitutional Convention	14,324 89	
Illinois Soldiers' College	14,154 45	
Lincoln Monument	50,000 00	
Military State Agent	3,900 00	
Money Refunded	8,767 64	
New State House	267,434 34	
State Agricultural and Horticultural Society	5,000 00	
State Entomologist	828 76	
Total Extraordinary Expenses		$1,092,72

Statement—Continued.

DISBURSEMENTS—Continued.		
Total Warrants drawn on Revenue Fund during year ending Nov. 30, 1870	....	$1,663,765 98
Outstanding Warrants Paid;		
Amount Revenue Warrants outstanding Dec. 1, 1869	$508,041 62	
Deduct " " " Dec. 1, 1870	4,747 97	
Amount outstanding Warrants paid during fiscal year		503,293 65
Total amount Revenue Fund disbursed by the State Treasury during the fiscal year ending Nov. 30, 1870	....	$2,167,059 63
Amount of General Revenue Fund received over amount disbursed during fiscal year	....	$1,458,295 22

No. 2.

STATEMENT *of Receipts and Disbursements of Special State Funds during the fiscal year commencing December* 1, 1869, *and ending November* 30, 1870.

STATE DEBT FUND.		Amount.
RECEIPTS.		
From Taxes of 1866		$55 08
From Taxes of 1868		38,750 90
From Taxes of 1869		743,067 11
Total State Debt Fund received during fiscal year		$781,873 09
DISBURSEMENTS.		
Amount paid for State Bonded Indebtedness	$77,501 92	
" refunded to Collectors on over-payment of accounts	2,178 44	
Total State Debt Fund disbursed during fiscal year		79,680 36
Amount State Debt Fund received over amount disbursed during fiscal year		$702,192 73

INTEREST FUND.		Amount.
RECEIPTS.		
From Taxes of 1868		$18,408 33
From Taxes of 1869		394,363 69
Total Interest Fund received during fiscal year		$412,772 02
* DISBURSEMENTS.		
Amount paid Interest on State Debt	$297,580 12	
Amount paid expenses, including premium on gold, in paying interest on State debt	11,934 29	
Amount paid Institution for Education Deaf and Dumb	2,918 51	
Amount paid Normal University, Bloomington	12,445 99	
Amount refunded to Collectors on over-payment of accounts	1,863 49	
Total Interest Fund disbursed during the fiscal year		326,687 40
Amount of Interest Fund received over amount disbursed during fiscal year		$86,084 62

* $54,564 93 of this fund was distributed to the several counties Jan. 1, 1870, being annual interest on the amount the State is indebted to the School, College and Seminary funds—the same being paid by Collectors direct to County Superintendents of Schools, on the certificate of the Auditor. The amount of such certificates being credited direct to the Collectors' accounts, the amount thereof does not go into the State Treasury; therefore this account does not include said amount.

STATE SCHOOL FUND.	Amount.
RECEIPTS.	
From Tax of 1868	$607 69
From Tax of 1869	151,935 09
Total State School Fund received during fiscal year	$152,542 78

Statement—Continued.

***DISBURSEMENTS.**			
Amount paid salary and clerk hire, Superintendent of Public Instruction		$6,500 00	
Amount paid office expenses, Superintendent Public Instruction		628 50	
Amount refunded to Collectors on over payment of accounts		163,330 51	
Warrants outstanding Dec. 1, 1869	$173 90		
Warrants outstanding Dec. 1, 1870	169 12		
Amount outstanding warrants paid during fiscal year		4 78	
Amount School Fund disbursed during fiscal year			$170,463 29
Amount School Fund disbursed over amount received during fiscal year			$17,920 51

*$900,000 of this fund was distributed to the several counties in the State on the 1st of January, 1870, the same being paid by the County Collectors to the County Superintendents of Schools on the certificate of the Auditor. The amount of such certificates being credited direct to the Collectors' accounts, the amount thereof does not go into the State Treasury; therefore this account does not include said amount.

ILLINOIS CENTRAL RAILROAD FUND.

RECEIPTS.	
From seven per cent. on gross earnings for six months ending Oct. 31, 1869	$254,989 56
From seven per cent. on gross earnings for six months ending April 30, 1870	214,819 56
Total Illinois Central Railroad fund received during the fiscal year	$469,809 12
DISBURSEMENTS.	
Amount paid for State bonded indebtedness	$1,000 66
Amount Illinois Central Railroad fund received over amount disbursed during fiscal year	$468,808 46

No. 3.

Statement *of Receipts and Disbursements during the fiscal year commencing Dec.* 1, 1869, *and ending Nov.* 30, 1870, *of Local Funds for payment of principal and interest of Bonded Indebtedness of Counties, Townships, Cities and Towns, registered in the Auditor's office.*

Name of Fund.	Receipts.	Disbursements.	Amount rec'd over amount disbursed.	Am't disbursed over am't received.
Brown County Bond Fund.......	$12,451 50	$10,658 36	$1,798 14	....
Clay " "	1,800 00	1,797 85	2 15	....
Hancock " "	9,709 97	10,526 37	....	$816 40
Henderson" "	6,574 61	6,642 40	....	67 79
Jefferson " "	8,000 00	....	8,000 00	....
Mason " "	12,197 29	2,183 15	10,014 14	....
Mercer " "	2,748 42	2,732 06	16 36	....
Pike " "	17,231 53	13,599 37	3,632 16	....
Sangamon" "	1,577 50	1,577 50	....	....
Schuyler " "	7,848 92	8,218 60	....	369 68
Wayne " "	11,305 22	3,487 05	7,818 17	....
Brimfield township "	4,842 55	4,600 00	242 55	....
Danville " "	8,207 24	....	8,207 24	....
Dayton " "	1,692 28	1,214 85	477 43	....
Elmwood " "	6,452 24	6,200 00	252 24	....
Evans " "	4,254 77	4,042 57	212 20	....
Osage " "	2,666 95	2,022 39	644 56	....
Ottawa " "	16,061 47	14,959 23	1,102 24	....
S'th Ottawa " "	3,182 21	2,930 60	251 61	....
Quincy City "	52,166 54	50,121 82	2,044 72	....
Warsaw City "	2,902 76	1,878 02	1,024 74	....
Buda, inc. town "	1,500 00	1,500 09	....	....
Winchester, inc.t'n"	3,000 00	....	3,000 00	....
Totals.....................	$198,378 97	$150,887 19	$48,740 65	$1,253 8

No. 4.

GENERAL STATEMENT *of Warrants drawn on the State Treasury during the fiscal year, commencing December* 1, 1869, *and ending November* 30, 1870.

TO WHAT ACCOUNT CHARGED.	Amount.
REVENUE FUND.	
Appropriations, Special	$56,600 00
Appropriations, General	8,911 81
Canal and River Improvement	146,846 58
Commissioners' Public Charities	5,288 65
Conveying Convicts to the Penitentiary	26,447 60
Contingent Fund	7,038 70
County Agricultural Societies	9,400 00
Constitutional Convention	168,672 92
Executive Mansion	8,775 05
Experimental School for Idiots	20,000 00
Field Notes and Surveys	711 92
Fugitives from Justice	4,206 42
Fund Commissioner's Clerk	1,000 00
General Assembly	1,588 68
Geological Survey	6,898 70
Geological Reports	4,813 25
Incidental Expenses	84,958 89
Insane Hospital, Jacksonville	100,750 00
Insane Hospital, Northern	110,000 00
Insane Hospital, Southern	40,000 00
Institution for the Blind	25,000 00
Institution for the Deaf and Dumb	58,250 00
Illinois Penitentiary	90,000 00
Illinois Soldiers' College	14,154 45
Illinois Industrial University	22,500 00
Judgments, Clerks' and Sheriffs' Fees	379 00
Money refunded	8,767 64
Military State Agent	3,900 00
Normal University, Bloomington	11,500 00
Normal University, Southern	70,119 07
Office of the Governor	928 87
Office of the Secretary of State	1,541 01
Office of the Auditor	2,551 40
Office of the Treasurer	1,514 20
Office of the Adjutant General	2,594 87
Public Printing	38,188 64
Public Binding	12,168 35
Publishing Notices	1,087 28
Porters in State House	5,367 50
Repairs to State House	289 75
Reports of Supreme Court	17,028 00
Revision of Statutes	142 00
Soldiers' Orphans' Home	45,500 00
State's Attorneys' fees	275 00
State Board of Equalization	8,691 75
State Library	6,767 85
Supreme Court—1st Division	2,357 01
" " 2d "	2,513 47
" " 3d "	4,552 18
State House, new	267,434 34
State Reform School	58,500 00
Salaries—Governor, (salary and clerk hire)	3,923 60
Amount carried forward	$1,546,485 85

Statement—Continued.

TO WHAT ACCOUNT CHARGED.	Amount.
Amount brought forward	$1,546,485 35
REVENUE FUND—CONTINUED.	
Salaries—Secretary of State, (salary and clerk hire)	3,800 00
" Auditor Public Accounts, (salary and clerk hire)	3,708 30
" State Treasurer, (salary and clerk hire)	2,475 00
" Attorney General	3,500 00
" Adjutant General	1,500 00
" State Entomologist	828 76
" Judiciary, 1st District, Supreme Court	3,780 22
" " 4th " " "	3,446 88
" " 5th " " "	3,680 22
" " 6th " " "	927 53
" " 7th " " "	594 20
" " 1st Circuit	2,130 43
" " 2d "	2,130 43
" " 3d "	2,130 43
" " 4th "	1,840 00
" " 5th "	2,130 43
" " 6th "	2,130 4
" " 7th "	2,000 0
" " 8th "	2,046 1
" " 9th "	2,130 4
" " 10th "	1,934 7
" " 11th "	1,880 4
" " 12th "	2,584 7
" " 13th "	2,130 4
" " 14th "	1,932 0
" " 15th "	1,880 4
" " 16th "	2,130 4
" " 17th "	2,130 4
" " 18th "	2,888 0
" " 19th "	2,130 4
" " 20th "	2,130 4
" " 21st "	1,880 4
" " 22d "	2,880 4
" " 23d "	2,130
" " 24th "	2,130
" " 25th "	2,880
" " 26th "	2,505
" " 27th "	1,880
" " 28th "	2,130
" " 30th "	2,769
" " Superior Court of Chicago	3,250
" " Recorder's Court of Chicago	684
" " Recorder's Court of Peru	750
" " Court Common Pleas, Sparta	1,000
" " Court Common Pleas, Aurora and Elgin	1,000
" " Court Common Pleas, Amboy	1,130
" " Court Common Pleas, Mattoon	848
" " Alton City Court	1,000
" State's Attorney, 1st Circuit	500
" " 2d "	250
" " 3d "	375
" " 4th "	500
" " 5th "	500
" " 6th "	500
Amount carried forward	$1,650,619

Statement—Continued.

TO WHAT ACCOUNT CHARGED.		Amount.
Amount brought forward		$1,650,619 48
REVENUE FUND—CONTINUED.		
Salaries—State's Attorney, 7th circuit........		750 00
" " 8th "		511 00
" " 9th "		700 00
" " 10th "		575 00
" " 11th "		500 00
" " 12th "		500 00
" " 13th "		500 00
" " 14th "		500 00
" " 15th "		500 00
" " 16th "		500 00
" " 17th "		500 00
" " 18th "		500 00
" " 19th "		375 00
" " 20th "		500 00
" " 21st "		625 00
" " 22d "		375 00
" " 23d "		375 00
" " 24th "		500 00
" " 25th "		473 00
" " 26th "		500 00
" " 27th "		500 00
" " 28th "		500 00
" " 30th "		600 00
" Prosecuting Attorney, Recorder's Court, Peru		100 00
" " Alton City Court........		187 50
" " Court Common Pleas, Sparta........		500 00
" " Court Common Pleas, Amboy........		500 00
Total Revenue Fund Warrants issued........		$1,663,765 98
SPECIAL STATE FUNDS.		
Central Railroad Fund	$1,000 66	
Interest Fund	309,464 41	
" Institution for Education of Deaf and Dumb....	2,912 51	
" Normal University, Bloomington	12,445 99	
" money refunded........	1,863 49	
State Debt Fund	77,501 92	
" " money refunded........	2,178 44	
State School Fund, Superintendent of Public Instruction......	6,500 00	
" " office Sup. Public Instruction	628 50	
" " money refunded	163,330 51	
Total warrants issued on Special State Funds........		577,827 48
LOCAL BOND FUNDS.		
infield Township Bond Fund	$4,600 00	
a Inc. Town "	1,500 00	
n County "	10,658 86	
y County "	1,797 85	
wood Township "	6,200 00	
ns "	4,042 57	
Amount carried forward........	$28,798 78	$2,241,593 41

Statement—Continued.

TO WHAT ACCOUNT CHARGED.		Amount.
Amount brought forward	$28,793 78	$2,241,593 41
LOCAL BOND FUNDS—CONTINUED.		
Dayton Township Bond Fund	1,214 85	
Hancock County "	10,526 37	
Henderson " "	6,642 40	
Mercer " "	2,732 06	
Mason " "	2,183 15	
Ottawa Township "	14,959 23	
Osage " "	2,022 39	
Pike County "	13,599 37	
Quincy City "	50,121 82	
South Ottawa Township Bond Fund	2,936 60	
Sangamon County "	1,577 50	
Schuyler " "	8,218 60	
Warsaw City "	1,878 02	
Wayne County "	3,487 05	
Total warrants issued on Local Bond Funds		150,887 19
Total warrants drawn on the State Treasury during fiscal year		$2,392,480 60

No. 5.

Detailed Statement *of Warrants drawn on the State Treasury, during the fiscal year, commencing December* 1, 1869, *and ending November* 30, 1870.

ACCOUNTS.	App	Amount.	Total.
APPROPRIATIONS—SPECIAL.			
To E. L. Gross & Bro., for 200 copies Gross' Statutes	1869	$1,600 00	
To E. B. McCagg, Treasurer Chicago Charitable Eye and Ear Infirmary, appropriation for year 1870............	1869	5,000 00	
To James H. Beveridge, Treasurer Lincoln Monument Association, for appropriation to aid in building monument to memory of Abraham Lincoln	1867	50,000 00	
			$56,600 00
APPROPRIATIONS—GENERAL.			
To John W. Bunn, for appropriations for year 1870, to State Agricultural Society...........................	1857	$3,000 00	
To Jonathan Huggins, Treasurer, appropriation for year 1870, to State Horticultural Society..................	1867	2,000 00	
To Kaskaskia River Navigation Company, for amount of State Revenue Tax collected in a certain district in Randolph county, for 1868.......................... ..	1869	1,585 30	
To St. Clair and Monroe Levee and Drainage Company, for amount of State Revenue Tax levied in a certain district in St. Clair county, for the years 1865 and 1866.......	65–7	9 43	
To St. Clair and Monroe Levee and Drainage Company, for State Revenue Tax levied in a certain district in Monroe county, for the years 1867 and 1868	65–7	165 38	
To Auditor, for reporting taxable lands and making transcripts of taxable lands for counties	1847	505 40	
To expenses in obtaining list of canal lands sold	1847	4 30	
To expenses of keeping interest and transfer books.......	1849	1,625 00	
To George C. Mathew, pay as private in company B, regt. State at large.........	1861	16 50	
			8,911 31
CANAL AND RIVER IMPROVEMENT.			
To contractors, and for engineering and materials for lock and dam at Henry, Illinois	1869	$140,483 73	
To land damages and attorneys' fees...	1869	1,037 85	
To Joseph Utley, Commissioner, per diem	1867	1,825 00	
To Robert Milne, " "	1867	1,370 00	
To Virgil Hickox, " "	1867	1,825 00	
To J. G. Gindele, " "	1867	305 00	
			146,846 58
COMMISSIONERS OF PUBLIC CHARITIES.			
To Elmer Baldwin, Commissioner, expenses	....	$274 40	
To George S. Robinson, " "	....	183 50	
To J. N. McCord, " "	....	341 25	
To S. M. Church, " "	....	257 70	
To Z. B. Lawson, " "	....	171 67	
To Fred. H. Wines, Secretary, per diem	....	3,000 00	
To Fred. H. Wines, " expenses	...	430 89	
To office expenses, including rent, furniture, postage and stationery	....	679 24	
			5,338 65
Amount carried forward.........................	....	... .	$217,696 54

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$217,696 54
CONVEYING CONVICTS TO PENITENTIARY.			
To Sheriff of Adams county, for conveying 32 convicts.	1851	$1,409 40	
‘‘ Alexander “ “ 39 “	1851,’65	3,847 65	
‘‘ Bond “ “ 1 “	1865	65 10	
‘‘ Boone “ “ 0 “	....	....	
‘‘ Brown “ “ 2 “	1865	132 60	
‘‘ Bureau “ “ 1 “	1851	84 65	
‘‘ Calhoun “ “ 3 “	1865	148 20	
‘‘ Carroll “ “ 3 “	‘‘	147 60	
‘‘ Cass “ “ 3 “	‘‘	198 90	
‘‘ Champaign “ “ 12 “	1851,’65	331 25	
‘‘ Christian “ “ 4 “	1865	216 00	
‘‘ Clark “ “ 5 “	1851	264 00	
‘‘ Clay “ “ 6 “	1851,’65	462 00	
‘‘ Clinton “ “ 0 “	... .	....	
‘‘ Coles “ “ 3 “	1865	160 20	
‘‘ Cook “ “ 173 “	1851	1,108 80	
‘‘ Crawford “ “ 2 “	‘‘	176 00	
‘‘ Cumberl’nd “ “ 2 “	‘‘	107 25	
‘‘ DeKalb “ “ 2 “	1851,’65	98 00	
‘‘ DeWitt “ “ 5 “	‘‘	146 90	
‘‘ Douglas “ “ 1 “	1865	43 50	
‘‘ DuPage “ “ 4 “	1851	53 55	
‘‘ Edgar “ “ 4 “	‘‘	215 25	
‘‘ Edwards “ “ 0 “	....	....	
‘‘ Effingham “ “ 2 “	1851	135 80	
‘‘ Fayette “ “ 2 “	1865	118 20	
‘‘ Ford “ “ 0 “	....	....	
‘‘ Franklin “ “ 2 “	1851,’65	181 35	
‘‘ Fulton “ “ 6 “	1851	202 40	
‘‘ Gallatin “ “ 2 “	‘‘	256 85	
‘‘ Greene “ “ 1 “	‘‘	74 90	
‘‘ Grundy “ “ 3 “	1865	21 60	
‘‘ Hamilton “ “ 1 “	1851	101 85	
‘‘ Hancock “ “ 4 “	1865	285 60	
‘‘ Hardin “ “ 0 “	....	....	
‘‘ Henderson “ “ 3 “	1851	163 80	
‘‘ Henry “ “ 17 “	‘‘	438 90	
‘‘ Iroquois “ “ 8 “	‘‘	148 50	
‘‘ Jackson “ “ 14 “	1851,’65	1,156 00	
‘‘ Jasper “ “ 3 “	1851	154 00	
‘‘ Jefferson “ “ 5 “	1865	385 50	
‘‘ Jersey “ “ 0 “	....	... .	
‘‘ JoDaviess “ “ 9 “	1851	343 80	
‘‘ Johnson “ “ 1 “	1865	96 90	
‘‘ Kane “ “ 5 “	1851	109 50	
‘‘ Kankakee “ “ 0 “	....	....	
‘‘ Kendall “ “ 0 “	....	....	
‘‘ Knox “ “ 3 “	1851,’65	140 60	
‘‘ Lake “ “ 4 “	‘‘	91 25	
‘‘ LaSalle “ “ 8 “	1851	98 90	
‘‘ Lawrence “ “ 5 “	1851,’65	390 00	
‘‘ Lee “ “ 7 “	1865	220 50	
‘‘ Livingston “ “ 3 “	1851,’65	54 15	
‘‘ Logan “ “ 13 “	‘‘	451 40	
Amount carried forward	....	$15,189 05	$217,696

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward........................	....	$15,189 05	$217,696 54
CONVEYING CONVICTS TO PENITENTIARY.			
To Sheriff of Macon county, for conveying 6 convicts...	1865	248 00	
“ Macoupin county, “ 5 “	1851,'65	216 20	
“ Madison “ “ 3 “	1851	212 40	
“ Marion “ “ 7 “	1851,'65	478 55	
“ Marshall “ “ 4 “	“	120 00	
“ Mason “ “ 5 “	“	252 65	
“ Massac “ “ 4 “	“	470 00	
“ McDonough “ “ 5 “	“	266 80	
“ McHenry “ “ 2 “	1865	53 40	
“ McLean “ “ 5 “	1851,'65	141 05	
“ Menard “ “ 0 “	....	....	
“ Mercer “ “ 4 “	1851	172 90	
“ Monroe “ “ 1 “	“	94 50	
“ Montgomery “ “ 1 “	“	68 25	
“ Morgan “ “ 15 “	“	621 00	
“ Moultrie “ “ 1 “	“	64 05	
“ Ogle “ “ 0 “	....	....	
“ Peoria “ “ 17 “	1851,'65	542 90	
“ Perry “ “ 3 “	1865	237 60	
“ Piatt “ “ 1 “	1851	54 60	
“ Pike “ “ 1 “	“	76 30	
“ Pope “ “ 1 “	“	144 90	
“ Pulaski “ “ 0 “	....	....	
“ Putnam “ “ 0 “	....	....	
“ Randolph “ “ 5 “	1851,'65	378 75	
“ Richland “ “ 0 “	....	....	
“ Rock Island “ “ 8 “	1851.'65	338 40	
“ Saline “ “ 0 “	....	....	
“ Sangamon “ “ 23 “	1851,'65	982 50	
“ Schuyler “ “ 2 “	1851	131 45	
“ Scott “ “ 2 “	1865	118 80	
“ Shelby “ “ 12 “	1851,'65	564 20	
“ Stark “ “ 4 “	“	128 00	
“ St. Clair “ “ 11 “	1851	668 00	
“ Stephenson “ “ 4 “	“	119 00	
“ Tazewell “ “ 12 “	1851,'65	389 40	
“ Union “ “ 9 “	“	757 50	
“ Vermilion “ “ 4 “	“	198 25	
“ Wabash “ “ 0 “	....	....	
“ Warren “ “ 3 “	1851,'65	150 10	
“ Washington “ “ 7 “	“	437 50	
“ Wayne “ “ 2 “	1865	166 20	
“ White “ “ 6 “	1851,'65	577 50	
“ Whiteside “ “ 4 “	“	131 00	
“ Will “ “ 0 “	....	....	
“ Williamson “ “ 2 “	1851	211 40	
“ Winnebago “ “ 6 “	1851,'65	214 50	
“ Woodford “ “ 3 “	“	90 10	
			26,447 60
Amount carried forward........................	....	....	$244,144 14

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$244,144 14
CONTINGENT FUND.			
To C. C. Howorth, for freight on frames for portraits of Abraham Lincoln and Stephen A. Douglas	1869	$48 40	
" O. H. Miner, for his services and expenses visiting Penitentiary at request of Governor	"	41 00	
" A. E. Darling, for frames for portraits of Abraham Lincoln and Stephen A. Douglas	"	381 60	
" E. B. Harlan, for services of Wm. C. Rich for arresting and obtaining supposed kidnappers, on Governor's order	"	35 50	
" Chicago & Alton Railroad Company, for transportation of sundry persons, on Governor's order	"	76 80	
" H Dilger, Adjutant General, for expense of firing salute in memory of Gen. Geo. H. Thomas	"	73 00	
" C. S. Zane, for legal services in suit of G. W. Chatterton vs. Auditor P. A., and others	"	100 00	
" E. B. Herndon, for legal services in suit of G. W. Chatterton vs. Auditor P. A., and others	"	100 00	
" McKee, Fishback & Co., for advertising Governor's proclamation in St. Louis *Democrat*	"	6 00	
" S. T. Mayo, for services and expenses examining accounts of Illinois Penitentiary	"	74 80	
" J. Bunn, for cabinet of insects belonging to estate of late Benj. D. Walsh, purchased by the State Entomologist, for the State	"	2,500 00	
" John M. Palmer, for frame for Governor's portrait	"	114 55	
" E. B. Harlan, for expenses in going to Monmouth, Ills., to quell a disturbance of the peace, by order of the Governor	"	28 30	
" H. Dilger, Adjutant General, for expenses going to Monmouth, Ills., to quell a disturbance of the peace, by order of the Governor	"	22 55	
" Chas. A. Hill, for his services in the case of the petition of Wm. M. Jackson, a convict in the Penitentiary, for a writ of *habeas corpus*	"	35 00	
" Chicago & Alton Railroad Company, for transportation of sundry persons, on Governor's order	"	20 20	
" John M. Palmer, for amount used in arresting an escaped convict	"	100 00	
" John M. Palmer, for amount paid Aug. Campbell for receiving the census returns from northern district Illinois	"	23 00	
" F. W. Tracy, Cashier, for amount due J. F. Rittenhouse, for arresting a fugitive from justice	"	60 00	
" A. L. Ide, for heating apparatus built for use of General Assembly in Second Presbyterian Church, Springfield, Ills	"	3,000 00	
" H. Dilger, for his expenses while accompanying the Governor on a tour of inspection of State Institutions	"	18 00	
" Wm. LeBaron, for cabinet to preserve Entomological Collection, and for engraving for report of State Entomologist	"	185 00	
			7,038
Amount carried forward	....	....	$251,182

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$251,182 84
COUNTY AGRICULTURAL SOCIETIES.			
To Bond County Agricultural Society, for 1870....	1861	$100 00	
Boone " " "	"	100 00	
Bureau " " "	"	100 00	
Carroll " " "	"	100 00	
Cass " " "	"	100 00	
Champaign " " "	"	100 00	
Christian " " "	"	100 00	
Clark " " "	"	100 00	
Clay " " "	"	100 00	
Clinton " " "	"	100 00	
Coles " " "	"	100 00	
Cook " " "	"	100 00	
Crawford " " "	"	100 00	
Cumberland " " "	"	100 00	
DeKalb " " "	"	100 00	
DeWitt " " "	"	100 00	
Douglas " " for 1869....	"	100 00	
DuPage " " for 1870....	"	100 00	
Edgar " " " ...	"	100 00	
Edwards " " " ...	"	100 00	
Fayette " " "	"	100 00	
Franklin " " "	"	100 00	
Fulton " " " ...	"	100 00	
Gallatin " " "	"	100 00	
Greene " " "	"	100 00	
Grundy " " "	"	100 00	
Hamilton " " "	"	100 00	
Hancock " " "	"	100 00	
Henderson " " "	"	100 00	
Henry " " "	"	100 00	
Iroquois " " "	"	100 00	
Jackson " " "	"	100 00	
Jefferson " " " ...	"	100 00	
Jersey " " for 1869 and '70	"	200 00	
Jo Daviess " " for 1870....	"	100 00	
Johnson " " "	"	100 00	
Kane " " "	"	100 00	
Kankakee " " "	"	100 00	
Kendall " " "	"	100 00	
Knox " " "	"	100 00	
Lake " " "	"	100 00	
LaSalle " " "	"	100 00	
Lawrence " " "	"	100 00	
Lee " " "	"	100 00	
Livingston " " "	"	100 00	
Macon " " " ...	"	100 00	
Macoupin " " "	"	100 00	
Madison " " "	"	100 00	
Marion " " "	"	100 00	
Marshall " " "	"	100 00	
Mason " " "	"	100 00	
Massac " " "	"	100 00	
McDonough " " "	"	100 00	
McHenry " " "	"	100 00	
Amount carried forward........................	....	$5,500 00	$251,182 84

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	$5,500 00	$251,182 84
COUNTY AGRICULTURAL SOCIETIES—CONTINUED.			
To McLean County Agricultural Society, for 1870....	1861	100 00	
Menard " " "	"	100 00	
Mercer " " "	"	100 00	
Monroe " " "	"	100 00	
Montgomery " " "	"	100 00	
Morgan " " "	"	100 00	
Moultrie " " "	"	100 00	
Ogle " " "	"	100 00	
Peoria " " "	"	100 00	
Perry " " "	"	100 00	
Piatt " " "	"	100 00	
Pike " " "	"	100 00	
Pope " " "	"	100 00	
Putnam " " "	"	100 00	
Randolph " " "	"	100 00	
Richland " " "	"	100 00	
Rock Island " " "	"	100 00	
Saline " " "	"	100 00	
Schuyler " " "	"	100 00	
Shelby " " "	"	100 00	
Stark " " "	"	100 00	
St. Clair " " "	"	100 00	
Tazewell " " "	"	100 00	
Union " " "	"	100 00	
Vermilion " " "	"	100 00	
Wabash " " "	"	100 00	
Warren " " "	"	100 00	
Wayne " " "	"	100 00	
Whiteside " " "	"	100 00	
Will " " "	"	100 00	
Williamson " " "	"	100 00	
Winnebago " " "	"	100 00	
Woodford " " "	"	100 00	
Atlanta (Logan County) Union Central Agricultural Society, for 1870	"	100 00	
Union Agricultural Institute, Sandwich, DeKalb County, for 1870	"	100 00	
Union Agricultural Society of JoDaviess, Stephenson and Lafayette Counties, for 1867-8-9 and 1870	"	400 00	
			9,400
COONSTITUTIONAL CONVENTION.			
To pay of members, officers and employees.............	1869	$83,703 60	
" " temporary officers	"	836 00	
" " chaplains	"	460 00	
" " official reporters.....................	"	21,142 18	
" " reporters' messenger...	"	648 00	
" " clerks of committees	"	942 00	
" " janitors of committee rooms	"	2,505 00	
" E. L. Baker, for printing and "Convention Journals" furnished members.	"	16,870 24	
" E. L. Merritt & Bro., for printing and "Convention Registers" furnished members	"	15,000 00	
" Enoch Paine, on contract for binding..............	"	2,500 00	
Amount carried forward.	....	$148,607 02	$260,582

Statement—Continued.

ACCOUNTS.	App	Amount.	Total.
Amount brought forward	...	$148,607 02	$260,582 84
CONSTITUTIONAL CONVENTION—CONTINUED.			
To translating and printing Const'n in foreign languages..	1869	2,854 49	
" printing Constitution in newspapers	"	9,210 00	
" printing paper..................................	"	7,649 23	
" postage	"	2,214 00	
" stationery..	"	688 50	
" proof reading.....................................	"	1,776 00	
" recording and indexing journals....................	"	500 00	
" committee room rent	"	80 00	
" coal for committee rooms.........................	"	27 43	
" maps.....	"	16 25	
" enrolling new Constitution	"	100 00	
(See p. 28, Incid. Exp. acct. for $14,324 89, Conv. Ex.)			168,672 92
EXECUTIVE MANSION.			
To appropriation for fuel, lights, etc	1869	$4,500 00	
" " " repairs	"	2,576 35	
" " " furnishing	"	1,698 70	
			8,775 05
EXPERIMENTAL SCHOOL FOR IDIOTS.			
To appropriation for support.............................	1869	....	20,000 00
FIELD NOTES AND SURVEYS.			
To salary of custodian.................................	1869	$500 00	
" stationery and furniture for office..................	"	201 92	
" postage...	"	10 00	
			711 92
FUGITIVES FROM JUSTICE.			
To sundry persons for returning fugitives	1867	$4,106 42	
" S. H. Gilson, for reward for arrest of Wm. H. Stout charged with crime of murder....................	"	200 00	
			4,306 42
FUND COMMISSIONERS' CLERK.			
To Enoch Moore, for salary..................	1869	....	1,000 00
GENERAL ASSEMBLY.			
To Phillips & Ingalls, for copying laws, journals, etc., 26th General Assembly....................................	1869	....	1,538 68
GEOLOGICAL SURVEY.			
To State Geologist, salary and expenses............1858	1869	$4,125 48	
" assistants, for salary and expenses..................	"	1,469 22	
" stationery	"	10 90	
" furniture, repairs, etc................................	"	93 15	
" Masonic Hall Stock Company, for rent..............	"	700 00	
" Topographer, for salary............................	1858	500 00	
			6,898 70
GEOLOGICAL REPORTS.			
To engraving for 4th volume	1869	$4,063 25	
" drawings of fossils for 5th volume.....................	"	750 00	
			4,813 25
Amount carried forward........	....	....	$477,299 78

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward			$477,299 7
INCIDENTAL EXPENSES.			
To printing paper	1869	$12,219 56	
" stationery	"	100 62	
" articles furnished	"	239 42	
" repairs	"	258 47	
" labor	"	325 25	
" flag-staff on State House cupola	"	160 00	
" gas burned at the State House	"	1,795 47	
" water rent	"	74 00	
" distribution laws, journals, reports, etc	"	1,156 96	
" watchmen at State House	"	2,993 25	
" scavenger	"	311 00	
" printing paper for Constitutional Convention	"	1,320 00	
" stationery " " "	"	7,061 50	
" blank books for convention journal for Constitutional Convention	"	90 00	
" rent of committee rooms for Constitutional Convention	"	817 85	
" furniture, stoves, matting, etc., for committee rooms for Constitutional Convention	"	1,296 59	
" extra clerks in Secretary's office for Constitutional Convention	"	2,583 00	
" janitor in water-closet for Constitutional Convention	"	261 25	
" maps and articles furnished for Constitutional Convention	"	62 00	
" postage for Constitutional Convention	"	18 00	
" repairs of desks, keys, etc , for Constitutional Convention	"	59 00	
" ice furnished for Constitutional Convention	"	114 00	
" distributing new Constitution, blanks and tickets for Constitutional Convention	"	641 70	
For ordinary expenses $20,634 00 " Convention 14,324 89			34,95
INSANE HOSPITAL—JACKSONVILLE.			
To ordinary expenses	1869	$90,000 00	
" insurance	"	750 00	
" patients' library	"	500 00	
" improvement of water works	"	2,000 00	
" " ventilation "old wings"	"	7,500 00	100,7
INSANE HOSPITAL—SOUTHERN.			
To appropriation for locating and erecting	1869		40,
INSANE HOSPITAL—NORTHERN.			
To appropriation for locating and erecting	1869		110,
INSTITUTION FOR THE EDUCATION OF THE BLIND.			
To ordinary expenses	1869		25,
Amount carried forward			$788,

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$788,008 67
INSTITUTION FOR THE EDUCATION OF THE DEAF AND DUMB.			
To ordinary expenses	1869	$56,250 00	
" repairs	"	2,000 00	
			58,250 00
Note.—See Interest Fund account for $2,913 51, paid his institution, being dividend of interest on School, College and Seminary Fund for 1869.			
ILLINOIS PENITENTIARY.			
To appropriation for maintaining and carrying on the penitentiary	1869	....	90,000 00
ILLINOIS SOLDIERS' COLLEGE.			
To appropriation for support and tuition of pupils	1869	....	14,154 45
ILLINOIS INDUSTRIAL UNIVERSITY.			
To Horticultural Department for 1870	1869	$10,000 00	
" Agricultural Department for 1870	"	12,500 00	
			22,500 00
JUDGMENTS—CLERKS' AND SHERIFFS' FEES.			
To costs in State suits	1858	....	379 00
MONEY REFUNDED.			
To collectors for overpayments on accounts	1853	$8,121 36	
" taxes refunded, paid in error	"	646 28	
			8,767 64
MILITARY STATE AGENT.			
To salary	....	$3,600 00	
" expenses	....	300 00	
			3,900 00
NORMAL UNIVERSITY—BLOOMINGTON.			
deficiency in salaries for 1870	1869	$9,000 00	
salary Curator Ill. Nat. History Society	"	1,500 00	
Museum Ill. Nat. History Society	"	1,000 00	
			11,500 00
Note.—See Interest Fund account for $12,445 99, paid institution, being dividend on School, College and minary Fund for 1869.			
NORMAL UNIVERSITY—SOUTHERN.			
building	1869	$65,000 00	
Ei Boyer, per diem and expenses as Trustee	"	697 00	
R. Hurd, " " "	"	544 75	
R. W. Harris, " " "	"	939 90	
R. J. Palmer, " " "	"	1,374 92	
m. E. Flannigan, per diem and expenses	"	1,562 50	
			70,119 07
Amount carried forward	....	....	$1,067,578 83

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	...	....	$1,067,578 83
OFFICE OF THE GOVERNOR.			
To stationery	1869	$77 50	
" postage	"	228 67	
" telegrams	"	113 25	
" express charges	"	85	
" articles furnished	"	138 85	
" subscription to papers	"	36 00	
" repairs	"	16 25	
" page in office	"	312 00	
			923 3
OFFICE OF THE SECRETARY OF STATE.			
To stationery	1869	$158 64	
" postage	"	491 48	
" express charges	"	177 70	
" articles furnished	"	296 69	
" blank books	"	160 00	
" repairs	"	56 50	
" examiners of printing and binding accounts	"	10 00	
" subscription for papers to file in state library	"	121 50	
" binding old books for state library	"	68 50	
			1,541
OFFICE OF AUDITOR OF PUBLIC ACCOUNTS.			
To stationery	1869	$995 60	
" postage	"	880 00	
" revenue stamps	"	11 65	
" express charges	"	80 00	
" telegrams	"	17 35	
" articles furnished	"	185 75	
" repairs	"	62 95	
" furniture	"	155 10	
" legal advice	"	150 00	
" Gross' Statutes and index to laws	"	13 00	
			2,551
OFFICE OF STATE TREASURER.			
To stationery	1869	$796 00	
" postage	"	406 00	
" articles furnished, and repairs	"	258 00	
" detective services	"	47 00	
" telegrams	"	7 20	
			1,51
OFFICE OF ADJUTANT GENERAL.			
To ordnance officer	....	$799 98	
" messenger	....	249 98	
" clerk	....	337 83	
" labor, cleaning arms	....	197 29	
" postage and incidental expenses	....	1,009 79	
			2,5
Amount carried forward	....	....	$1,076,7

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$1,076,708 68
PUBLIC PRINTING.			
To E. L. Baker, laws, etc., 26th General Assembly	1869	$4,450 00	
same State Agricultural Report (balance)	"	203 00	
same blanks, circulars, election registers, etc.	"	22,607 24	
same advertising	"	128 40	
To John P. Baker, reports, blanks, circulars, etc	"	5,800 00	
			33,188 64
PUBLIC BINDING.			
To Enoch Paine, for 25th General Assembly	1869	$363 35	
same for 26th "	"	11,800 00	
			12,163 35
PUBLISHING NOTICES.			
To proposals for printing and binding	1849	$580 23	
" printing paper	"	495 05	
" wood for State House	"	12 00	
			1,087 28
PORTERS OF THE STATE HOUSE.			
To porters at State House	1869	....	5,367 50
REPAIRS TO STATE HOUSE.			
To shrubbery for grounds	1869	$119 00	
" repairs in water-closet	"	53 60	
" removing dirt and rubbish from gutters and yard	"	54 00	
" glass in windows	"	18 75	
" repairing gates, doors and locks	"	44 40	
			289 75
REPORTS OF SUPREME COURT.			
To 564 copies of the 46th and 47th volumes	1865	$6,768 00	
" 570 copies of the 48th, 49th and 50th volumes	"	10,260 00	
			17,028 00
REVISION OF STATUTES.			
Gross' Statutes, in sheets and bound	1869	$46 00	
" books furnished Commissioners	"	96 00	
			142 00
SOLDIERS' ORPHANS' HOME.			
ordinary expenses	1869	$45,000 00	
" insurance	"	500 00	
			45,500 00
STATE'S ATTORNEYS' FEES.			
commissions on amount collected on judgments	1849	....	275 00
STATE BOARD OF EQUALIZATION.			
pay of officers for services after adjournment, session 1869	1867	$600 00	
" per diem and mileage of members and officers, session 1870	"	6,932 50	
clerks of committees, session 1870	"	252 00	
postage, session 1870	"	615 00	
stationery	"	292 25	
			8,691 75
Amount carried forward	....	....	$1,200,436 95

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$1,200,486 95
STATE LIBRARY.			
To new books purchased	1869	$6,000 00	
" new books purchased	1865	500 00	
" expenses purchasing books	1869	241 50	
" express charges on books	"	26 35	
			6,767 85
SUPREME COURT, FIRST DIVISION—Now SOUTHERN.			
To law books purchased	1857	$350 75	
" clerk's salary as librarian	"	250 00	
" clerk hire, allowed clerk	1869	486 09	
" postage, express charges and incidental expenses	1849	792 25	
" stationery	"	121 42	
" record book	"	31 50	
" repairs of Court House	1869	825 00	
			2,857 01
SUPREME COURT, SECOND DIVISION—Now MIDDLE.			
To law books purchased	1857	$615 25	
" clerk's salary as Librarian	"	150 00	
" clerk hire, allowed clerk	1869	600 00	
" postage stamps, express charges, etc	1849	280 90	
" labor, and articles furnished	"	172 62	
" stationery	"	495 70	
" compensation allowed sheriff Sangamon county	"	87 00	
" sheriff Sangamon county, attendance on court	1865	112 00	
			2,513 47
SUPREME COURT, THIRD DIVISION—Now NORTHERN.			
To law books purchased	1857	$469 80	
" clerk's salary as librarian	"	100 00	
" repairs of court house	1849	794 64	
" furniture	"	618 50	
" labor, and materials	"	561 59	
" postage, stationery, etc	"	1,088 75	
" washing, express charges, etc	"	81 47	
" printing	"	327 50	
" binding	"	115 75	
" coal	"	180 00	
" articles furnished	"	64 13	
" janitor	"	150 00	
			4,552 13
STATE HOUSE—NEW.			
To per diem of commissioners and secretary	1869	$7,310 00	
" stationery, furniture and other office expenses	"	583 22	
" porter in commissioners' office	"	847 50	
" rent of office	"	1,490 00	
" advertising and printing	"	1,009 65	
" commissions of superintendents, on expenditures	"	7,531 57	
" services of assistant superintendent	"	3,000 00	
" employees, for measuring stone, etc	"	1,156 00	
" railroad tracks purchased	"	1,000 00	
" analysis of stone	"	144 20	
Amount carried forward	....	$24,072 14	$1,216,627 41

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	$24,072 14	$1,216,627 41
STATE HOUSE—NEW.—CONTINUED.			
To Nails and articles furnished	1869	$24 43	
" Brick furnished on contract	"	912 42	
" Illinois Penitentiary, for stone and dressing stone	"	169,194 58	
" Barnard and Gowen, for labor and materials, on contract	"	73,280 77	
			$267,484 34
STATE REFORM SCHOOL.—PONTIAC.			
To appropriation for building and providing for economical working of State Reform School	1869	$58,500 00	
			58,500 00
SALARIES—STATE OFFICERS.			
To Governor, for salary	1869	$1,500 00	
" " " clerk hire	"	2,423 60	
			3,923 60
To Secretary of State, for salary	1869	$800 00	
" " " " as Librarian	"	500 00	
" " " for clerk hire	"	2,500 00	
			3,800 00
To Auditor of Public Accounts, for salary	1869	$750 00	
" " " " " clerk hire	"	2,958 30	
			3,708 30
To State Treasurer, for salary	1869	$600 00	
" " " clerk hire	"	1,875 00	
			2,475 00
To Attorney General, for salary	1869	$3,500 00	
			3,500 00
To Adjutant General, for salary	1869	$1,500 00	
			1,500 00
To State Entomologist, for salary	67–9	$828 76	
			828 76
SALARIES—JUDICIARY.			
To Judge Supreme Court, First District, for salary, under new Constitution	1870	$1,260 87	
" Judge Supreme Court, First Division, for salary	1869	822 57	
" " " " for clerk hire	1865	1,096 78	
" " " " for additional clerk hire	1869	600 00	
			3,780 22
To Judge Supreme Court, Fourth District, for salary under new Constitution	1870	$927 53	
" Judge Supreme Court, Second Division for salary	1869	822 57	
" " " " " clerk hire	1865	1,096 78	
" " " " " additional clerk hire	1869	600 00	
			3,446 88
Amount carried forward	....	....	$1,569,524 51

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$1,569,524 51
SALARIES—JUDICIARY.—CONTINUED.			
To Judge Supreme Court, Fifth District, for salary, under new Constitution	1870	$927 53	
" Judge Supreme Court, Third Division, for salary	1869	922 57	
" " " " for clerk hire	1865	1,230 12	
" " " " for additional clerk hire	1869	600 00	
			3,680 22
To Judge Supreme Court, Sixth District, for salary under new Constitution	1870	$927 53	
			927 53
To Judge Supreme Court, Seventh District, for salary under new Constitution	1870	$594 20	
			594 20
To Judge First Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	934 78	
" " " under new Constitution	1870	195 65	
			2,130 43
To Judge Second Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	934 78	
" " " under new Constitution	1870	195 65	
			2,130 43
To Judge Third Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	934 78	
" " " under new Constitution	1870	195 65	
			2,130 43
To Judge Fourth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	840 00	
			1,840 00
To Judge Fifth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	934 78	
" " " under new Constitution	1870	195 65	
			2,130 43
To Judge Sixth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	934 78	
" " " under new Constitution	1870	195 65	
			2,130 43
To Judge Seventh Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	1,000 00	
			2,000 00
To Judge Eighth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	1869	932 06	
" " " under new Constitution	1870	114 10	
			2,046 16
Amount carried forward	....	....	$1,591,264 77

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	....	....	$1,591,264 77
SALARIES—JUDICIARY.—CONTINUED.			
To Judge Ninth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	934 78	
" " " under New Constitution	1870	195 65	
			2,130 43
To Judge Tenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	934 78	
			1,934 78
To Judge Eleventh Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	684 78	
" " " under New Con	1870	195 65	
			1,880 43
To Judge Twelfth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	834 78	
" " " under New Con	1870	750 00	
			2,584 78
To Judge Thirteenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	934 78	
" " " under New Con	1870	195 65	
			2,130 43
To Judge Fourteenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	932 06	
			1,932 06
To Judge Fifteenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	684 78	
" " " under New Con	1870	195 65	
			1,880 43
To Judge Sixteenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	934 78	
" " " under New Con	1870	195 65	
			2,130 43
To Judge Seventeenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	934 78	
" " " under New Con	1870	195 65	
			2,130 43
To Judge Eighteenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	1,184 78	
" " " under New Con	1870	698 30	
			2,883 08
To Judge Nineteenth Circuit, for revision of Statutes	1869	$1,000 00	
" " for salary	"	934 78	
" " " under New Con	1870	195 65	
			2,130 43
Amount carried forward	....	....	$1,615,012 48

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward	...	....	$1,615,012 48
SALARIES—JUDICIARY.—CONTINUED.			
To Judge Twentieth Circuit, for revision of Statutes	1869	$1,000 00	
“ “ for salary	“	934 78	
“ “ “ under New Con.	1870	195 65	2,130 43
To Judge Twenty-first Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	684 78	
“ “ “ “ under New Con.	1870	195 65	1,880 43
To Judge Twenty-second Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	934 78	
“ “ “ “ under New Con.	1870	945 65	2,880 43
To Judge Twenty-third Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	934 78	
“ “ “ “ under New Con.	1870	195 65	2,130 43
To Judge Twenty-fourth Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	934 78	
“ “ “ “ under New Con.	1870	195 65	2,130 43
To Judge Twenty-fifth Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	934 78	
“ “ “ “ under New Con	1870	945 65	2,880 43
To Judge Twenty-sixth Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	934 78	
“ “ “ “ under New Con.	1870	570 65	2,505 43
To Judge Twenty-seventh Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	684 78	
“ “ “ “ under New Con.	1870	195 65	1,880 43
To Judge Twenty-eighth Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	934 78	
“ “ “ “ under New Con.	1870	195 65	2,130 43
To Judge Thirtieth Circuit, for revision of Statutes	1869	$1,000 00	
“ “ “ for salary	“	823 37	
“ “ “ “ under New Con.	1870	945 65	2,769 02
To Judge Superior Court of Chicago, for salaries	1869	$3,250 00	3,250 00
To Judge Recorder's Court of Chicago, for salary	“	$684 78	684 78
Amount carried forward	....	....	$1,642,265 15

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward....................................	...	....	$1,642,265 15
SALARIES—JUDICIARY.—CONTINUED.			
To Judge Recorder's Court of Peru, for salary...........	1869	$750 00	750 00
To Judge Court of Common Pleas, Aurora and Elgin, for salary....................................	1869	$1,000 00	1,000 00
To Judge Alton City Court, for salary.	1869	$1,000 00	1,000 00
To Judge Court of Common Pleas, city of Amboy, for salary....................................	1869	$934 00	
" Judge Court of Common Pleas, city of Amboy, for salary, under new Constitution..................	1870	195 65	1,130 43
To Judge Court of Common Pleas, city of Mattoon, for salary....................................	1869	$848 90	848 90
To Judge Court of Common Pleas, Sparta, for salary....	1869	$1,000 00	1,000 00
SALARIES—ATTORNEYS'.			
To State's Attorney, First........Circuit, for salary....	1869	$500 00	
" Second " "	"	250 00	
" Third " "	"	375 00	
" Fourth " "	"	500 00	
" Fifth " "	"	500 00	
" Sixth " "	"	500 00	
" Seventh " "	"	375 00	
" Eighth " "	"	511 00	
" Ninth " " 1849	"	700 00	
" Tenth " "	"	575 00	
" Eleventh " "	"	500 00	
" Twelfth " "	"	500 00	
" Thirteenth " "	"	500 00	
" Fourteenth " "	"	500 00	
" Fifteenth " "	"	500 00	
" Sixteenth " "	"	500 00	
" Seventeenth " "	"	500 00	
" Eighteenth " "	"	500 00	
" Nineteenth " "	"	375 00	
" Twentieth " "	"	500 00	
" Twenty-first " "	"	625 00	
" Twenty-second " "	"	375 00	
" Twenty-third " "	"	375 00	
" Twenty-fourth " "	"	500 00	
" Twenty-fifth " " . .	"	473 00	
" Twenty-sixth " "	"	500 00	
" Twenty-seventh " "	"	500 00	
" Twenty-eighth " "	"	500 00	
" Thirtieth " " 1849	"	500 00	
Amount carried forward..................................	....	$14,109 00	$1,647,994 48

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward....	....	$14,109 00	$1,647,994 48
SALARIES—JUDICIARY.—CONTINUED.			
To Prosecuting Attorney, Superior Court of Chicago.....	1869	187 50	
" " Recorder's " "	"	187 50	
" " " " Peru..	"	100 00	
" " Alton City Court.............	"	187 50	
" " Court Common Pleas, Sparta..	"	500 00	
" " " " " Amboy.	"	500 00	15,771 50
SPECIAL STATE FUNDS.			
CENTRAL RAILROAD FUND.			
To State Indebtedness paid under Governor's proclamation of October 9, 1868..................	....	....	1,000 66
INTEREST FUND.			
To over-payment on Collectors' accounts..............	1858	$1,868 49	
" Payment of 48th and 49th Installment of Interest....	....	287,387 25	
" past due interest at Treasury............	....	10,142 87	
" premium on gold, and expenses.........	....	11,984 29	
" Institution for Education Deaf and Dumb, for interest dividend on School, College, and Seminary Fund..	....	2,913 51	
" Normal University, for interest dividend on School, College, and Seminary Fund................. .	....	12,445 99	$26 687 40
STATE DEBT FUND.			
To over-payment on Collectors' accounts...............	1858	$2,178 44	
" bonds paid, under Governor's proclamation, January 29, 1869....	....	4,000 00	
" bonds paid, under Governor's proclamation, November 23, 1869...	....	67,000 00	
" bonds purchased by the Governor................ .	.. .	4,925 00	
" Scrip, Interest Certificates, and interest on bonds purchased...................	....	1,166 52	
" advertising Governor's proclamation, Nov. 23, 1869..	....	410 40	79,680 36
STATE SCHOOL FUND.			
To over-payments on Collectors' accounts.............	1858	$168,330 51	
" Superintendent of Public Instruction, salary, clerk hire, and traveling expenses....................	1869	6,500 00	
" office expenses of Superintendent Public Instruction..	"	628 50	170,459 01
LOCAL BOND FUNDS.			
To interest on Brimfield township bonds, and expenses ..	....	$4,600 00	
" " Buda Inc. Town " "	....	1,500 00	
" int. and pr. Brown county " "	....	10,658 36	
" interest on Clay " " "	....	1,797 85	
" " Elmwood township " "	....	6,200 00	
Amount carried forward.	....	$24,751 21	$2,241,593 41

Statement—Continued.

ACCOUNTS.	App.	Amount.	Total.
Amount brought forward........................	....	$24,751 21	$2,241,593 41
LOCAL BOND FUNDS—CONTINUED.			
To interest on Evans Township Bonds, and expenses.	....	4,042 57	
" Dayton " " "	....	1,214 85	
" Hancock County " "	....	10,526 37	
" pr. and int. Henderson " " "	...	6,642 40	
" Mercer " " "	....	2,732 06	
" interest on Mason " " "	....	2,188 15	
" Ottawa Township " "	....	14,959 23	
" Osage " " "	....	2,022 39	
" Pike County " "	....	18,599 37	
" Quincy City " "	....	50,121 82	
" South Ottawa Township " "	....	2,930 60	
" Sangamon County " "	....	1,577 50	
" Schuyler " " "	....	8,218 60	
" Wayne " " "	....	3,487 05	
" Warsaw City " "	..	1,878 02	
			150,887 19
Grand total of warrants issued during the fiscal year....	...	....	$2,392,480 60

No. 6.

STATEMENT *of Warrants outstanding Dec.* 1, 1869, *and Nov.* 30, 1870.

Amount of warrants outstanding Dec. 1, 1869		$508,041 62
Amount of warrants issued to Nov. 30, 1870		2,392,480 60
Total		$2,900,522 22
Amount of warrants returned to Auditor's office, canceled, to Nov. 30, 1870		2,895,605 13
Amount of warrants outstanding Dec. 1, 1870:		
Revenue warrants	$4,747 97	
School Fund warrants	169 12	
		$4,917 09

No. 7.

STATEMENT *of the condition of the School, College and Seminary Funds, on the first day of December*, 1870.

Amount of surplus revenue credited to School Fund	$335,592 32	
Amount of 3 per cent. fund credited to School Fund	613,362 96	
		$948,955 28
Amount of 3 per cent. fund credited to the College Fund		156,613 32
Amount of the Seminary Fund		59,838 72
Total of School, College and Seminary Funds		$1,165,407 32
Paid one year's interest, at 6 per cent., on the above funds, as follows:		
To the Normal University		$12,445 99
To the Institution for the Deaf and Dumb		2,913 51
Distributed to counties, as per table		54,564 93
Total		$69,924 43

No. 8.

STATEMENT *of State Indebtedness called in by proclamation of the Governor, paid with the Central Railroad Fund, and canceled and deposited with the Auditor of Public Accounts, during the fiscal year, commencing Dec.* 1, 1869, *and ending Nov.* 30, 1870.

When purchased.	From whom purchased—description of stock, etc.	Amount.
Aug. 19, 1870	E. N. Bates, Treas., interest stock No. 2501; prin. $1000, int. 66 cts	$1,000 66

No. 9.

Statement *of State Indebtedness purchased by the Governor, and called in by proclamation and paid for with State Debt Fund, during the fiscal year commencing Dec.* 1, 1869, *and ending Nov.* 30, 1870.

Date.	From whom purchased, description, etc.	Amount.
1869 Dec. 8	J. H. Beveridge, canal interest certif. No. 998, dated July 1, 1847	$100 00
1870 Jan'y 20	F. W. Tracy, Cas., Refunded Stock, 1862, No. 292; int. $15	1,015 00
1870 Jan'y 27	H. & F. W. Myer, coupons from 5 Internal Improvement Bonds, Nos. 155—159, Jan'y, '42.	79 40
1870 Jan'y 31	Eleazor Barney, Internal Impt. Scrip, 3112 A, $100; int. $178 50	278 50
1870 Jan'y 31	E. N. Bates, Tr., Refunded Stock, 1862, No. 475; int. $15	1,015 00
1870 Jan'y 31	E. N. Bates, Tr., Refunded Stock, 1869, Nos. 7, 8, 18—32, 36, 38, 55, 56. 58, 68—73, 77, 90—100, 107, 141, 143, 144, 146, 147, 159, 193, 194, 195, 198—202, 213	56,000 00
1870 Feb'y 17	E. N. Bates, Tr., Refunded Stock, 1869, Nos. 59, 60, 61; interest $1 50	3,001 50
1870 March 7	E. N. Bates, Tr., Refunded Stock, 1869, No. 57; interest 50c.	1,000 50
1870 April 8	E. N. Bates, Tr., Refunded Stock, 1862, No. 42	1,000 00
1870 April 18	R. I. Cross, Thornton Loan Bond, No. 29; interest $17 17	1,017 17
1870 April 21	E. N. Bates, Tr., Refunded Stock, 1862, No. 422; interest $15.	1,015 00
1870 May 27	I & J. Lockie, New Internal Improvement Stock, ($159 12) Nos. 1151, 1152, $318 24; interest $7 79	326 03
1870 July 25	F. W. Tracy, Cas., Internal Improvement Scrip, No. 3283 B, $100; interest $180 65	280 65
1870 July 25	A. Belmont & Co., Atty's for Rothschild & Sons, arrears of interest on 3152 and 3153, N. I. I. Stock	710 40
1870 Aug. 10	E. N. Bates, Tr., Refunded Stock, 1869, Nos. 47, 80, 81, 108; interest $2.	4,002 00
1870 Aug. 18	E. N. Bates, Tr., Refunded Stock, 1869, Nos. 39 and 40; interest $1 00	2,001 00
1870 Aug. 19	E. N. Bates, Tr., for Ex'r of Rowand Ronald, N. I. Imp. Stock, No. 5847; interest $8 17	1,008 17
1870 Aug. 19	E. N. Bates, Tr., for Ex'r of Rowand Ronald, Interest Bond, No. 2311, $691 76; interest $5 65	697 41
1870 Oct. 21	E. N. Bates, Tr., Refunded Stock, 1869, No. 11; interest 50c.	1,000 50
1870 Oct. 22	E. N. Bates, Tr., Ex'r for Mary Chew, N. I. I. Stock, Nos. 4346, 4347, 4348, $159 12 each, amounting to $477 36; interest $8 91	486 27
1870 Oct. 22	E. N. Bates, Tr., for Ex'r of Mary Chew, Interest Bond No. 1894, $500, No. 1895, $537 64; interest $19 38	1,057 02
	Total	$77,091 52

No. 10.

STATEMENT *of the State Treasurer's Accounts with the different Funds, for* 1870.

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

REVENUE FUND.

To amount in Treasury December 1, 1869	$2,735 88	By canceled Warrants returned	$2,167,059 63
To amount received to December 1, 1870	3,620.354 85	By balance in Treasury	1,456,031 05
	$3,623,090 68		$3,623,090 68

STATE DEBT FUND.

To amount in Treasury December 1, 1869	$1,114,153 67	By canceled Warrants returned	$79,680 36
To amount received to December 1, 1870	781,873 09	By balance in Treasury	1,816,346 40
	$1,896,026 76		$1,896,026 76

INTEREST FUND.

To amount in Treasury December 1, 1869	$235,904 70	By canceled Warrants returned	$326,687 40
To amount received to December 1, 1870	412,772 02	By balance in Treasury	321,989 32
	$648,676 72		$648,676 72

STATE SCHOOL TAX FUND.

To amount in Treasury December 1, 1869	$97,737 82	By canceled Warrants returned	$170,463 79
To amount received to December 1, 1870	152,542 78	By balance in Treasury	79,816 81
	$250,280 60		$250,280 60

CENTRAL RAILROAD FUND.

To amount in Treasury December 1, 1869	$296,949 36	By canceled Warrants returned	$1,000 66
To amount received to December 1, 1870	469,809 12	By balance in Treasury	765,757 82
	$766,758 48		$766,758 48

DELINQUENT LAND TAX FUND.

To amount in Treasury December 1, 1869	$331 06	By balance in Treasury	$331 06
	$331 06		$331 06

BROWN COUNTY INTEREST FUND.

To amount in Treasury December 1, 1869	$44 55	By canceled Warrants returned	$10,653 36
To amount received to December 1, 1870	12,451 50	By balance in Treasury	1,842 69
	$12,496 05		$12,496 05

CLAY COUNTY INTEREST FUND.

To amount received to December 1, 1870	$1,800 00	By canceled Warrants returned	$1,797 85
		By balance in Treasury	2 15
	$1,800 00		$1,800 00

HANCOCK COUNTY INTEREST FUND.

To amount in Treasury December 1, 1869	$1,340 04	By canceled Warrants returned	$10,526 37
To amount received to December 1, 1870	9,709 97	By balance in Treasury	523 64
	$11,050 01		$11,050 01

Statement—Continued.

HENDERSON COUNTY INTEREST FUND.

To amount in Treasury December 1, 1869	$309 86	By canceled Warrants returned	$6,642 40
To amount received to December 1, 1870	6,574 61	By balance in Treasury	242 07
	$6,884 47		$6,884 47

MASON COUNTY INTEREST FUND.

To amount received to December 1, 1870	$12,197 29	By canceled Warrants returned	$2,183 15
		By balance in Treasury	10,014 14
	$12,197 29		$12,197 29

MERCER COUNTY INTEREST FUND.

To amount in Treasury December 1, 1869	$171 01	By canceled Warrants returned	$2,732 06
To amount received to December 1, 1870	2,748 42	By balance in Treasury	187 37
	$2,919 43		$2,919 43

PIKE COUNTY INTEREST FUND.

To amount received to December 1, 1870	$17,231 53	By canceled Warrants returned	$13,599 37
		By balance in Treasury	3,632 16
	$17,231 53		$17,231 53

SANGAMON COUNTY INTEREST FUND.

To amount received to December 1, 1870	$1,577 50	By canceled Warrants returned	$1,577 50
	$1,577 50		$1,577 50

SCHUYLER COUNTY INTEREST FUND.

To amount in Treasury December 1, 1869	$876 13	By canceled Warrants returned	$8,218 60
To amount received to December 1, 1870	7,848 92	By balance in Treasury	506 45
	$8,725 05		$8,725 05

WAYNE COUNTY INTEREST FUND.

To amount received to December 1, 1870	$11,305 22	By canceled Warrants returned	$3,487 05
		By balance in Treasury	7,818 17
	$11,305 22		$11,305 22

JEFFERSON COUNTY INTEREST FUND.

To amount received to December 1, 1870	$8,000 00	By balance in Treasury	$8,000 00
	$8,000 00		$8,000 00

BRIMFIELD TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$4,842 55	By canceled Warrants returned	$4,600 00
		By balance in Treasury	242 55
	$4,842 55		$4,842 55

DANVILLE TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$8,207 24	By balance in Treasury	$8,207 24
	$8,207 24		$8,207 24

Statement—Continued.

DAYTON TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$1,692 28	By canceled Warrants returned	$1,214 85
		By balance in Treasury	477 43
	$1,692 28		$1,692 28

ELMWOOD TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$6,452 24	By canceled Warrants returned	$6,200 00
		By balance in Treasury	252 24
	$6,452 24		$6,452 24

EVANS TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$4,254 77	By canceled Warrants returned	$4,042 57
		By balance in Treasury	212 20
	$4,254 77		$4,254 77

OSAGE TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$2,666 95	By canceled Warrants returned	$2,022 39
		By balance in Treasury	644 56
	$2,666 95		$2,666 95

OTTAWA TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$16,061 47	By canceled Warrants returned	$14,959 23
		By balance in Treasury	1,102 24
	$16,061 47		$16,061 47

SOUTH OTTAWA TOWNSHIP INTEREST FUND.

To amount received to December 1, 1870	$3,182 21	By canceled Warrants returned	$2,930 60
		By balance in Treasury	251 61
	$3,182 21		$3,182 21

QUINCY CITY INTEREST FUND.

To amount in Treasury December 1, 1869	$6,527 49	By canceled Warrants returned	$50,121 82
To amount recived to December 1, 1870	52,166 54	By balance in Treasury	8,572 21
	$58,694 03		$58,694 03

WARSAW CITY INTEREST FUND.

To amount in Treasury December 1, 1869	$405 20	By canceled Warrants returned	$1,878 02
To amount received to December 1, 1870	2,902 76	By balance in Treasury	1,429 94
	$3,307 96		$3,307 96

INCORPORATED TOWN OF BUDA INTEREST FUND.

To amount received to Dec. 1, 1870	$1,500 00	By canceled Warrants returned	$1,500 00
	$1,500 00		$1,500 00

Statement—Continued.

INCORPORATED TOWN OF WINCHESTER INTEREST FUND.

To amount received to December 1, 1870..............	$3,000 00	By balance in Treasury..............................	$3,000 00
	$3,000 00		$3,000 00

RECAPITULATION OF TREASURER'S ACCOUNTS.

Funds.	In the treasury Dec. 1, 1869.	Received during fiscal year ending Nov. 30, 1870.	Total.	Funds.	Warrants canceled during fiscal year ending Nov. 30, 1870.	Balance in the treasury.	Total.
Revenue	$2735 83	$3,620,354 85	$3,623,090 68	Revenue	$2,167,059 63	$1,456,081 05	$3,623,090 68
State Debt	1,114,153 67	781,878 09	1,896,026 76	State Debt	79,680 36	1,816,846 40	1,896,026 76
Interest	235,904 70	412,772 02	648,676 72	Interest	326,687 40	321,989 32	648,676 72
State School Tax	97,737 82	152,542 78	250,280 60	State School Tax	170,463 79	79,816 81	250,280 60
Central Railroad	296,949 36	469,809 12	766,758 48	Central Railroad	1000 66	765,757 82	766,758 48
Delinquent Land Tax	331 06	....	331 06	Delinquent Land Tax	....	331 06	331 06
Brown County Interest	44 55	12,451 50	12,496 05	Brown County Interest	10,653 36	1842 69	12,496 05
Clay County Interest	....	1800 00	1800 00	Clay County Interest	1797 85	2 15	1800 00
Hancock County Interest	1340 04	9709 97	11,050 01	Hancock County Int	10,526 37	523 64	11,050 01
Henderson County Int	309 86	6574 61	6884 47	Henderson County Int	6642 40	242 07	6884 47
Mason County Interest	....	12,197 29	12,197 29	Mason County Interest	2183 15	10,014 14	12,197 29
Mercer County Interest	171 01	2748 42	2919 43	Mercer County Interest	2732 06	187 37	2919 43
Pike County Interest	....	17,231 53	17,231 53	Pike County Interest	13,599 37	3632 16	17,231 53
Sangamon County Int	....	1577 50	1577 50	Sangamon County Int	1577 50	....	1577 50
Schuyler County Interest	876 13	7841 92	8725 05	Schuyler County Int	8218 60	506 45	8725 05
Wayne County Interest	....	11,305 22	11,305 22	Wayne County Interest	3487 05	7818 17	11,305 22
Jefferson County Interest	....	8000 00	8000 00	Jefferson County Interest	....	8000 00	8000 00
Brimfield Township Int	....	4842 55	4842 55	Brimfield Township Int	4600 00	242 55	4842 55
Danville Township Int	....	8207 24	8207 24	Danville Township Int	....	8207 24	8207 24
Dayton Township Int	....	1692 28	1692 28	Dayton Township Int	1214 85	477 43	1692 28
Elmwood Township Int	....	6452 24	6452 24	Elmwood Township Int	6200 00	252 24	6452 24
Evans Township Interest	....	4254 77	4254 77	Evans Township Interest	4042 57	212 20	4254 77
Osage Township Interest	....	2666 95	2666 95	Osage Township Interest	2022 39	644 56	2666 95
Ottawa Township Int	....	16,061 47	16,061 47	Ottawa Township Int	14,959 23	1102 24	16,061 47
S. Ottawa Township Int	....	3182 21	3182 21	S. Ottawa Township Int	2930 60	251 61	3182 21
Quincy City Interest	6527 49	52,166 54	58,694 03	Quincy City Interest	50,121 82	8572 21	58,694 03
Warsaw City Interest	405 20	2902 76	3307 96	Warsaw City Interest	1878 02	1429 94	3307 96
Inc. Town of Buda Int	....	1500 00	1500 00	Inc. Town of Buda Int	1500 00	....	1500 00
Inc. Town Winchester Int	....	3000 00	3000 00	Inc. Town Winchester Int	....	3000 00	3000 00
	$1,757,486 72	$5,635,725 83	$7,393,212 55		$2,895,779 08	$4,497,433 52	$7,393,212 55

No. 11.

Statement of the aggregate amount of State taxes charged, the amount of abatements, commissions, etc., deducted, the amount collected, the amount paid over by collectors, and the amount remaining unpaid in each county, for the year 1869.

Counties.	Amount charged.	Abatements, commissions, etc.	Net amount collected.	Amount paid.	Amount due.
City of Quincy	$68,567 92	$3990 79	$64,577 18	$64,577 13	....
Adams	86,709 22	4208 06	82,501 16	82,501 16	....
Alexander	28,559 41	14,983 19	8576 22	8576 22	....
Bond	30,247 25	1860 50	28,386 75	28,386 75	....
Boone	30,921 16	1789 57	29,131 59	29,131 59	....
Brown	22,731 59	1640 52	21,091 07	21,091 07	....
Bureau	93,158 96	4583 94	88,575 02	88,575 02	....
Calhoun	9359 47	413 11	8946 36	8946 36	....
Carroll	40,286 48	1975 88	38,310 60	38,310 60	....
Cass	30,783 04	1127 27	29,605 77	29,605 77	....
Champaign	73,601 88	4579 47	69,022 41	69,022 41	....
Christian	55,590 98	2870 24	52,720 74	52,720 74	....
Clark	34,452 78	1874 41	32,578 37	32,578 37	....
Clay	28,969 73	1729 22	27,240 51	27,240 51	....
Clinton	48,203 40	8552 12	39,651 28	39,651 28	....
Coles	61,987 70	5175 74	56,811 96	56,811 96	....
Cook	1,224,775 75	....	....	825,334 86	$399,440 89
Crawford	25,706 34	3148 07	22,558 27	22,558 27	....
Cumberland	21,252 25	4074 02	17,178 28	17,178 23	....
DeKalb	61,801 34	3182 22	58,619 12	58,619 12	....
DeWitt	35,287 14	2306 42	32,980 72	32,980 72	....
Douglas	31,686 90	1775 03	29,911 87	29,911 87	....
DuPage	44,629 40	6886 72	37,742 68	37,742 68	....
Edgar	61,814 33	6342 43	55,471 90	55,471 90	....
Edwards	17,010 73	669 86	16,340 87	16,340 87	....
Effingham	27,627 07	4887 25	22,739 82	22,739 82	....
Fayette	40,019 00	3926 87	36,092 13	36,092 13	....
Ford	24,103 56	1677 95	22,425 61	22,425 61	....
Franklin	17,900 62	1121 55	16,779 07	16,288 65	490 42
Fulton	91,081 77	4714 46	86,367 31	86,367 31	....
Gallatin	14,886 17	921 16	13,965 01	13,965 01	....
Greene	52,235 06	2019 85	50,215 21	50,215 21	....
Grundy	44,241 01	2250 56	41,990 45	41,990 45	....
Hamilton	17,742 40	....	....	15,719 61	2022 79
Hancock	79,412 27	4687 90	74,724 37	74,724 37	....
Hardin	5982 77	430 61	5552 16	4775 87	776 29
Henderson	34,413 15	1617 29	32,795 86	32,795 86	....
Henry	86,957 75	4668 47	82,289 28	82,289 28	....
Iroquois	67,757 17	4037 25	63,719 92	63,719 92	....
Jackson	38,864 18	9175 88	29,688 30	29,688 30	....
Jasper	21,565 74	3384 99	18,180 75	18,180 75	....
Jefferson	39,977 17	....	....	26,760 15	13,217 0
Jersey	39,751 97	2509 07	37,242 90	37,242 90	....
Jo Daviess	45,516 67	3275 01	42,241 66	42,241 66	....
Johnson	14,854 65	1372 37	13,482 28	13,482 28	....
Kane	102,263 28	4693 82	97,569 41	97,569 41	....
Kankakee	46,736 97	2838 96	43,898 01	43,898 01	....
Kendall	33,474 98	1633 85	31,841 13	31,841 13	....
Knox	105,601 48	5098 64	100,502 84	100,502 84	....
Lake	38,232 28	1737 52	36,494 76	36,494 85	....
LaSalle	158,053 89	10,962 71	147,091 18	147,091 18	....
Lawrence	29,437 92	6218 31	23,219 61	23,219 61	....
Lee	63,666 52	3224 74	60,441 78	60,441 78	....
Livingston	81,959 16	5542 83	76,416 33	71,430 21	4986 1

Statement—Continued.

Counties.	Amount charged.	Abatements, commissions, etc.	Net amount collected.	Amount paid.	Amount due.
Logan	$66,203 82	$3,568 54	$62,635 28	$62,635 28	....
Macon	64,814 67	3,577 27	61,237 40	61,237 40	....
Macoupin	94,418 61	8,386 56	86,032 05	86,032 05	....
Madison	129,710 03	13,898 51	115,811 52	104,564 46	$11,247 06
Marion	48,941 78	7,450 73	44,491 05	41,491 05	....
Marshall	39,905 36	2,231 73	37,673 63	37,673 63	....
Mason	49,826 57	10,378 03	39,448 54	39,448 54	....
Massac	13,250 98	1,267 04	11,983 94	11,983 94	....
McDonough	68,023 76	3,801 06	64,222 70	64,222 70	....
McHenry	62,677 52	2,982 30	59,695 22	59,695 22	....
McLean	141,711 34	6,710 85	135,000 49	135,000 49	....
Menard	28,970 04	1,196 15	27,773 89	27.773 89	....
Mercer	53,922 47	2,617 97	51,304 50	51,304 50	....
Monroe	33,140 15	9,167 10	23,973 05	23,973 05	....
Montgomery	57,315 16	2,810 81	54,504 35	54,504 35	....
Morgan	92,665 96	4,096 24	88,568 72	88,568 72	....
Moultrie	24,817 68	3,379 38	21,438 30	21,438 30	....
Ogle	77,205 32	4,064 22	73,141 10	73,141 10	....
Peoria	117,229 41	5,507 55	111,721 86	111,721 86	....
Perry	23,916 36	2,068 13	21,848 23	21,848 23	....
Piatt	35,263 90	2,092 76	33,171 14	33,171 14	....
Pike	75,471 00	4,017 32	71,453 68	71,453 68	....
Pope	16,207 12	1,677 66	14,330 16	14,330 16	....
Pulaski	11,230 86	4,351 57	6,879 29	5,289 41	1,589 88
Putnam	14,822 14	816 47	14,005 67	14,005 67	....
Randolph	51,339 49	19,018 15	32,321 34	32,321 34	....
Richland	29,980 24	1,787 17	28,193 07	28,193 07	....
Rock Island	60,087 88	3,404 83	56,683 05	56,683 05	....
Saline	15,810 87	1,031 86	14,779 01	14,779 01	....
Sangamon	157,868 46	8,152 21	149,716 25	149,716 25	....
Schuyler	35,151 16	1,954 64	33,196 52	33,196 52	....
Scott	19,223 18	758 01	18,465 17	17,347 62	1,117 55
Shelby	62,920 00	4,595 54	58,324 46	58,324 46	....
Stark	25 832 49	1,440 59	24,391 90	24,391 90	....
St. Clair	126,328 19	32,655 56	93,672 63	93,672 63	....
Stephenson	69,761 26	3,671 46	66,089 80	66,089 80	....
Tazewell	62,869 34	3,232 84	59,636 50	59,636 50	....
Union	25,549 91	1,492 52	24,057 39	24,057 39	....
Vermilion	85,988 12	4,677 81	81,310 31	81,310 31	....
Wabash	15,497 69	601 29	14,896 40	14,896 40	....
Warren	59,779 17	3,388 74	56,390 43	56,390 43	....
Washington	39,161 72	3,152 90	36,008 82	36,008 82	....
Wayne	31,246 72	5,687 26	25,559 46	25,559 46	....
White	26,949 19	1,350 46	25,598 73	25,598 73	....
Whiteside	70,831 22	3,365 44	67,465 78	57,465 78	....
Will	92,677 30	4,401 06	88,276 33	88,276 33	....
Williamson	19,970 76	4,552 48	15,418 28	15,418 28	....
Winnebago	83,505 59	4,078 16	79,427 43	79,427 43	....
Woodford	45,854 85	2,545 51	43,309 34	43,309 34	....
Totals	$6,483,008 83	$421,481 11	$4,779,081 90	$5,626,689 20	$484,888 02

No. 12.

Statement of School Fund Tax levied in the year 1869, *showing the aggregate amount charged, the amount deducted for abatements, commissions, etc., the net amount collected, the amount paid to each county, etc.*

Counties.	Amount charged.	Amount of abatem'ts, commis'ns etc.	Net amount.	Am't paid county.	Amount received from county over the amount paid.	Amount p'd county over amount received.
Adams	$23,888 80	$1034 70	$22,854 10	$18,598 75	$4255 35	....
Alexander	3624 52	164 83	3459 69	3583 13	....	$123 44
Bond	4653 42	235 26	4418 16	5425 25	....	1007 09
Boone	4757 12	226 21	4530 91	4629 02	....	98 11
Brown	3497 16	216 06	3281 10	5328 35	....	2047 25
Bureau	14,332 14	570 60	13,761 54	13,535 70	225 84	....
Calhoun	1439 92	39 97	1399 95	3172 65	....	1272 20
Carroll	6197 92	241 02	5956 90	6641 25	....	684 35
Cass	4728 16	121 34	4606 82	5429 58	....	822 76
Champaign	11,323 38	598 83	10,724 55	11,241 60	....	517 05
Christian	8552 44	369 92	8182 52	8928 93	....	746 41
Clark	5300 42	233 44	5066 98	7925 27	....	2858 29
Clay	4456 90	217 30	4239 60	6615 72	....	2376 12
Clinton	7415 90	1249 77	6166 13	6395 06	....	228 93
Coles	9530 58	704 66	8831 92	9460 51	....	628 59
Cook	188,427 04	13,000 00	175,427 04	60,617 65	114,809 39	....
Crawford	3954 82	440 78	3514 04	6384 01	....	2869 97
Cumberland	3269 58	591 35	2678 23	5161 67	....	2483 44
DeKalb	9507 90	399 47	9108 43	9329 06	....	220 63
DeWitt	5428 80	296 99	5131 81	5909 95	....	778 14
Douglas	4874 90	222 04	4652 86	5616 75	....	963 89
DuPage	7374 57	1501 75	5872 82	5927 15	....	54 33
Edgar	9509 90	885 58	8624 32	9592 68	....	968 36
Edwards	2617 04	64 01	2553 03	3135 25	....	582 22
Effingham	4250 32	707 64	3542 68	6465 45	....	2922 77
Fayette	6156 76	537 18	5619 58	8779 85	....	3160 27
Ford	3708 24	187 31	3520 93	3628 97	....	108 04
Franklin	2753 94	137 10	2616 84	5964 55	....	3347 71
Fulton	14,012 58	596 89	13,415 69	15,365 69	....	1950 00
Gallatin	2833 72	113 14	2720 58	4266 86	....	1546 28
Greene	8036 18	232 58	7803 60	7986 60	....	183 00
Grundy	6806 32	272 79	6533 53	5891 36	642 17	....
Hamilton	2729 60	110 00	2619 60	5392 66	....	2773 06
Hancock	12,217 28	602 75	11,614 53	13,862 43	....	2247 90
Hardin	920 42	44 88	875 54	2096 81	....	1221 27
Henderson	5294 34	191 22	5103 12	5336 10	....	232 98
Henry	13,378 12	591 44	12,786 68	11,913 41	873 27	....
Iroquois	10,424 18	517 78	9906 40	11,262 56	....	1356 16
Jackson	5979 10	1359 60	4619 50	7610 02	....	2990 52
Jasper	3317 82	481 81	2836 01	5881 86	....	3045 85
Jefferson	4768 72	350 00	4418 72	7916 75	....	3503 03
Jersey	6115 70	322 66	5793 04	5626 50	166 54	....
JoDaviess	7002 56	435 90	6566 66	10,978 13	....	4411 47
Johnson	2285 34	179 17	2106 17	5504 35	....	3391 18
Kane	15,732 80	572 79	15,160 01	11,202 17	3957 84	....
Kankakee	7190 30	364 25	6826 05	9197 25	....	2371 20
Kendall	5149 98	200 24	4949 74	5129 54	....	179 80
Knox	16,246 38	633 63	15,612 75	13,233 95	2378 80	....
Lake	5881 88	214 40	5667 48	7584 24	....	1916 76
LaSalle	24,315 98	1248 10	23,066 88	21,803 74	1263 14	....

Statement—Continued.

Counties.	Amount charged.	Amount of abatem'ts, commis'ns etc.	Net amount.	Am'nt paid county.	Am't rec'd from co'y over am't paid.	Am'nt paid co'nty over am't rec'd.
Lawrence	$4187 82	$421 87	$3715 95	$5126 88	....	$1410 93
Lee...........	9794 84	402 16	9392 68	10,218 33	....	895 65
Livingston.....	12,609 10	787 24	11,871 86	10,530 89	$1340 97	....
Logan.........	10,185 22	452 09	9733 13	8730 21	1002 92	....
Macon........	9971 48	451 94	9519 54	9425 41	94 13	....
Macoupin	14,525 94	1168 09	13,362 85	13,974 10	....	611 25
Madison	19,955 38	1979 51	17,975 87	14,996 90	2978 97	....
Marion	7529 50	1078 50	6451 00	8699 19	....	2248 19
Marshall......	6139 26	257 22	5882 04	6880 89	....	948 85
Mason	7665 64	407 64	7258 00	6145 60	1112 40	....
Massac	2038 62	164 05	1874 57	3748 74	....	1874 17
McDonough	10,465 20	512 78	9952 42	10,490 57	....	538 15
McHenry.......	9642 68	366 16	9276 52	9552 49	....	275 97
McLean	21,801 74	887 88	20,964 86	17,213 58	3750 78	....
Menard.......	4456 92	133 34	4323 58	4698 91	....	375 33
Mercer	8295 76	322 27	7973 49	7954 87	18 62	....
Monroe........	5098 48	1364 22	3734 26	5193 40	....	1459 14
Montgomery....	8817 72	344 23	8473 49	9535 10	....	1061 61
Morgan	14,256 30	501 39	13,754 91	10,299 28	3455 63	....
Moultrie	3818 12	476 70	3341 42	4304 72	....	963 30
Ogle	11,877 74	515 56	11,362 18	10,924 71	437 47	....
Peoria.......	18,085 28	684 68	17,350 60	15,030 24	2320 36	....
Perry..........	3679 44	274 73	3404 71	5771 81	....	2367 10
Piatt..........	5425 22	260 70	5164 52	4771 79	392 73	....
Pike	11,610 92	506 88	11,104 04	13,189 98	....	2085 94
Pope..........	2449 38	225 96	2223 42	5472 00	....	3248 58
Pulaski........	1727 82	417 12	1310 70	2570 55	....	1259 85
Putnam.......	2280 32	103 59	2176 73	2661 45	....	484 72
Randolph	7898 38	1664 75	6233 63	8274 67	....	2041 04
Richland	4612 34	220 64	4391 70	5515 37	....	1124 67
Rock Island....	9244 22	435 92	8808 30	10,275 71	....	1467 41
Saline	2432 36	127 60	2304 76	5686 99	....	3382 23
Sangamon	24,287 46	1040 11	23,247 35	16,015 56	7231 79	....
Schuyler	5407 86	249 88	5157 98	7026 13	....	1868 15
Scott	2957 42	82 03	2875 39	4024 58	....	1149 19
Shelby	9680 00	611 77	9068 23	10,073 46	....	1005 23
Stark..........	3974 22	184 30	3789 92	4389 44	....	599 52
St. Clair	19,485 12	2180 29	17,304 88	15,859 26	1445 57	....
Stephenson.....	10,732 52	463 88	10,268 64	11,556 81	....	1287 67
Tazewell	9672 22	407 61	9264 61	10,387 87	....	1123 26
Union	3930 76	180 31	3750 45	6968 58	....	3218 13
Vermilion	13,228 94	590 00	12,638 94	12,996 80	....	357 86
Wabash	2384 26	60 00	2324 26	3347 27	....	1023 01
Warren	9180 14	412 56	8767 58	8851 91	....	84 33
Washington ...	6024 88	422 08	5602 80	7872 53	....	2269 73
Wayne	4807 18	264 92	4542 26	8450 61	....	3908 35
White	4146 02	156 84	3989 18	7055 98	....	3066 80
Whiteside......	10,897 10	414 67	10,482 48	10,196 63	285 80	....
Will	14,258 06	543 33	13,714 78	14,620 57	....	905 84
Williamson	3072 44	668 02	2404 42	6800 94	....	4396 52
Winnebago	12,147 02	505 19	12,341 88	9315 87	3025 96	....
Woodford	7054 60	328 86	6725 74	7907 63	....	1181 89
Totals	$996,630 25	$62,360 69	$934,269 56	$900,000 00	$157,466 44	$123,196 88

NOTE.—Abatements estimated for the counties of Cook, Hamilton and Jefferson.

No. 13.

Statement showing the amount of interest on School Fund, and the amount of School Tax Fund distributed to the several counties in the State, for the year 1869.

Counties.	Interest.	Tax.	Total.
Adams	$1,127 59	$18,598 75	$19,726 34
Alexander	217 24	3,583 13	3,800 37
Bond	328 92	5,425 25	5,754 17
Boone	280 65	4,629 02	4,909 67
Brown	323 05	5,328 35	5,651 40
Bureau	820 64	13,535 70	14,356 34
Calhoun	192 35	3,172 65	3,365 00
Carroll	402 65	6,641 25	7,043 90
Cass	329 19	5,429 58	5,758 77
Champaign	681 55	11,241 60	11,923 15
Christian	541 33	8,928 93	9,470 26
Clark	480 49	7,925 27	8,405 76
Clay	401 10	6,615 72	7,016 82
Clinton	387 72	6,395 06	6,782 78
Coles	573 56	9,460 51	10,034 07
Cook	3,675 05	60,617 65	64,292 70
Crawford	387 05	6,384 01	6,771 06
Cumberland	312 95	5,161 67	5,474 62
DeKalb	565 60	9,329 06	9,894 66
DeWitt	358 31	5,909 95	6,268 26
Douglas	340 53	5,616 75	5,957 28
DuPage	359 35	5,927 15	6,286 50
Edgar	581 58	9,592 68	10,174 26
Edwards	190 09	3,135 25	3,325 34
Effingham	392 00	6,465 45	6,857 45
Fayette	532 30	8,779 85	9,312 15
Ford	220 02	3,628 97	3,848 99
Franklin	361 62	5,964 55	6,326 17
Fulton	931 58	15,365 69	16,297 27
Gallatin	258 70	4,266 86	4,525 56
Greene	484 21	7,986 60	8,470 81
Grundy	357 19	5,891 36	6,248 55
Hamilton	326 95	5,392 66	5,719 61
Hancock	840 44	13,862 43	14,702 87
Hardin	127 14	2,096 81	2,223 95
Henderson	323 52	5,336 10	5,659 62
Henry	722 28	11,913 41	12,635 69
Iroquois	682 82	11,262 56	11,945 38
Jackson	461 38	7,610 02	8,071 40
Jasper	356 61	5,881 86	6,238 47
Jefferson	479 98	7,916 75	8,396 73
Jersey	341 12	5,626 50	5,967 62
Jo Daviess	665 58	10,978 13	11,643 71
Johnson	333 72	5,504 35	5,838 07
Kane	679 16	11,202 17	11,881 33
Kankakee	557 61	9,197 25	9,754 86
Kendall	310 99	5,129 54	5,440 53
Knox	802 33	13,233 95	14,036 28
Lake	459 82	7,584 24	8,044 06
LaSalle	1,321 89	21,803 74	23,125 63
Lawrence	310 83	5,126 88	5,437 71
Lee	619 51	10,218 33	10,837 84
Livingston	638 47	10,530 89	11,169 36
n	529 29	8,730 21	9,259 50

Statement—Continued.

Counties.	Interest.	Tax.	Total.
Macon	$571 44	$9,425 41	$9,996 85
Macoupin	847 21	13,974 10	14,821 31
Madison	909 22	14,996 90	15,906 12
Marion	527 41	8,699 19	9,226 60
Marshall	414 14	6,830 89	7,245 03
Mason	372 60	6,145 60	6,518 20
Massac	227 28	3,748 74	3,976 08
McDonough	636 02	10,490 57	11,126 59
McHenry	579 14	9,552 49	10,131 63
McLean	1,043 62	17,213 58	18,257 20
Menard	284 89	4,698 91	4,983 80
Mercer	482 28	7,954 87	8,437 15
Monroe	314 87	5,193 40	5,508 27
Montgomery	578 10	9,535 10	10,113 20
Morgan	624 43	10,299 28	10,923 71
Moultrie	260 99	4,304 72	4,565 71
Ogle	662 33	10,924 71	11,587 04
Peoria	911 24	15,030 24	15,941 48
Perry	349 93	5,771 81	6,121 74
Piatt	289 30	4,771 79	5,061 09
Pike	799 67	13,189 98	13,989 65
Pope	331 75	5,472 00	5,803 75
Pulaski	155 86	2,570 55	2,726 41
Putnam	161 36	2,661 45	2,822 81
Randolph	501 67	8,274 67	8,776 34
Richland	334 39	5,515 37	5,849 76
Rock Island	622 99	10,275 71	10,898 70
Saline	344 79	5,686 99	6,031 78
Sangamon	970 98	16,015 56	16,986 54
Schuyler	425 98	7,026 13	7,452 11
Scott	244 00	4,024 58	4,268 58
Shelby	610 73	10,073 46	10,684 19
Stark	266 13	4,389 44	4,655 57
St. Clair	961 50	15,859 26	16,820 76
Stephenson	700 63	11,556 31	12,256 94
Tazewell	629 79	10,387 87	11;017 66
Union	422 49	6,968 58	7,391 07
Vermilion	787 97	12,996 80	13,784 77
Wabash	202 94	3,347 27	3,550 21
Warren	536 67	8,851 91	9,388 58
Washington	477 30	7,872 53	8,349 83
Wayne	512 34	8,450 61	8,962 95
White	427 79	7,055 98	7,483 77
Whiteside	618 20	10,196 63	10,814 83
Will	886 41	14,620 57	15,506 98
Williamson	412 33	6,800 94	7,213 27
Winnebago	564 80	9,315 87	9,880 67
Woodford	479 43	7,907 63	8,387 06
Totals	$54,564 93	$900,000 00	$954,564 93

No. 14.—*Statement of Bonds issued by Counties, Townships, Cities and Towns, registered in the Auditor's Office.*

County.	By whom issued.	Railroad Aided.	Rate of Int.	Amount Registered		
				Under act 1869.	Under act 1865.	Total.
Adams	County of Adams	Quincy, Alton & St. Louis	6		$20,000	$20,000
"	" "	Quincy & Warsaw	6	*$200,000		200,000
"	City of Quincy	Northern Cross	6	*160,000		160,000
"	" "	Quincy and Palmyra	6	*15,500		15,500
"	" "	N. C—Q. & R—C. B & Q—and other purposes.	6		943,600	943,600
"	Township of Keene	Quincy and Warsaw	10	10,000		10,000
Brown	County of Brown	Northern Cross	6	*23,000	77,700	100,700
Bond	" Bond	St. Louis, Vandalia & Terre Haute	10	41,200		41,200
Bureau	Incorporated town of Buda	Dixon, Peoria & Hannibal	10	15,000		15,000
Clay	County of Clay	Illinois Southeastern	7	99,900		99,900
"	Township of Harter	same	10	20,000		20,000
Champaign	" Urbana	Danville, Urbana, Bloomington & Pekin	10	16,000		16,000
"	" West Urbana	same	10	67,000		67,000
Cass	City of Beardstown	Rockford, Rock Island & Alton	7	3,500		3,500
"	" "	Rockford, Rock Island & St. Louis	10	44,300		44,300
"	Inc. town of Arenzville	same	10	4,000		4,000
Clark	County of Clark	St. Louis, Vandalia & Terre Haute	8	69,915		69,915
Christian	" Christian	Springfield & Illinois Southeastern	8	20,000		20,000
"	" "	Decatur & East St. Louis	8	50,000		50,000
"	Township of Johnson	same	8	10,000		10,000
"	" May	same	8	5,000		5,000
"	" King	same	8	5,000		5,000
"	" Bear Creek	same	8	10,000		10,000
"	" Stonington	same	8	5,000		5,000
"	" Ricks	same	8	10,000		10,000
"	" Taylorville	same	8	20,000		20,000
"	" "	Springfield & Illinois Southeastern	10	5,000		5,000
"	" Pana	same	10	5,000		5,000
"	" Locust	same	10	1,000		1,000
"	" Buckhart	same	10	2,000		2,000

DeWitt	Township of Santa Anna	Danville, Urbana, Bloomington & Pekin	10	2,000		2,000
Effingham	" Mason	Illinois Southeastern	10	10,000		10,000
"	" Douglas	St. Louis, Vandalia and Terre Haute	10	50,000		50,000
"	" Summit	same	10	10,000		10,000
"	" Moccasin	same	10	5,000		5,000
"	" Teutopolis	same	10	15,000		15,000
"	Inc. town of Edgewood	Illinois Southeastern	10	10,000		10,000
Fulton	Township of Pleasant	Peoria & Hannibal	10	15,000		15,000
"	" Vermont	same	10	30,000		30,000
"	" "	Rockford, Rock Island & St. Louis	10	24,000		24,000
"	" Woodland	same	10	15,000		15,000
"	" Farmers	same	10	35,000		35,000
"	" Astoria	same	10	50,000		50,000
"	Inc. town of Astoria	same	10	10,000		10,000
Fayette	Township of Vandalia	St. Louis, Vandalia & Terre Haute	10	40,000		40,000
Gallatin	County of Gallatin	Illinois Southeastern	8	175,000		175,000
Greene	" Greene	Jacksonville, Alton & St. Louis	6	2,000		2,000
"	" "	Rockford, Rock Island & St. Louis	8	50,000		50,000
"	Inc. town of Greenfield	same	8	4,000		4,000
"	" White Hall	same	10	10,000		10,000
Hancock	County of Hancock	Mississippi & Wabash and Warsaw & Rockford	6		$180,500	180,500
"	City of Warsaw	same	6		38,600	38,600
"	Inc. town of Carthage	Quincy & Warsaw	10	10,000		10,000
"	Township of St. Albans	same	10	20,000		20,000
"	" Bear Creek	same	10	20,000		20,000
Henderson	County of Henderson	Warsaw & Rockford	6		71,000	71,000
Henry	Township of Western	Rockford, Rock Island & St. Louis	8	20,000		20,000
Jefferson	County of Jefferson	Mt. Vernon	8	100,000		100,000
Jersey and Macoupin	Inc. town of Brighton	Rockford, Rock Island & St. Louis	8	25,000		25,000
Kendall	County of Kendall	Ottawa, Oswego & Fox River Valley	10	47,000		47,000
"	Township of Fox	same	10	14,000		14,000
"	" Kendall	same	10	22,000		22,000
Kankakee	" Ganeer	Chicago, Danville & Vincennes	10	24,000		24,000
"	" Momence	same	10	24,000		24,000
"	" Yellowhead	same	10	18,000		18,000
Kane	" Aurora	Ottawa, Oswego & Fox River Valley	10	60,000		60,000
"	" "	Chicago & Iowa	10	100,000		100,000
Knox	" Rio	Rockford, Rock Island & St. Louis	8	30,000		30,000
LaSalle	" Osage	Ottawa, Oswego & Fox River Valley	10	20,000		20,000
"	" South Ottawa	same	10	30,000		30,000

Statement—Continued.

County.	By whom issued.	Railroad Aided.	Rate of Int.	Amount Registered.		
				Under act 1869.	Under act 1865.	Total.
LaSalle.	Township of Ottawa	Ottawa, Oswego & Fox River Valley	10	$150,000		$150,000
"	" Dayton	same	10	12,000		12,000
"	" Bruce	same	10	13,000		13,000
Livingston	" Dwight	St. Louis, Jacksonville & Chicago	10	15,000		15,000
Mercer	County of Mercer	Western Air Line	6		$44,000	44,000
"	Township of Millersburg	American Central	10	5,000		5,000
"	" Eliza	same	10	5,000		5,000
"	" New Boston	same	10	10,000		10,000
"	Inc. town of New Boston	same	7	10,000		10,000
Marshall	Township of Evans	Ottawa, Oswego & Fox River Valley	10	40,000		40,000
Mason	County of Mason	Illinois River	8	27,000		27,000
McLean	City of Bloomington	St. Louis, Jacksonville & Chicago	8	31,000		31,000
"	Township of Bloomington	same	8	31,000		31,000
"	" "	Danville, Urbana, Bloomington & Pekin	10	56,500		56,500
"	" Downs	same	10	6,000		6,000
"	" Empire	same	10	42,000		42,000
"	" Danvers	same	10	22,000		22,000
"	" West	Indianapolis, Bloomington & Western	10	6,500		6,500
"	" Allin	St. Louis, Jacksonville & Chicago	8	20,500		20,500
McDonough	County of McDonough	Northern Cross	8	64,000		64,000
"	Township of Mound	Rockford, Rock Island & St. Louis	10	40,000		40,000
"	" New Salem	same	10	50,000		50,000
"	" Bushnell	same	10	50,000		50,000
"	" Walnut Grove	same	10	15,000		15,000
"	" Eldorado	same	10	6,000		6,000
Morgan	City of Jacksonville	Pekin, Peoria & Jacksonville	10	23,000		23,000
"	Town. 15 N., R. 10 W., 3 P.M.	Illinois Farmers	10	50,000		50,000
"	" 14 N., R. 9 W., 3 P.M.	same	10	32,000		32,000
Menard	County of Menard	Tonica & Petersburg	10	9,000		9,000
Madison	Inc. town of Edwardsville	Decatur & East St. Louis	8	25,000		25,000

Macon	County of Macon	Decatur & East St. Louis	8	100,000		100,000
Montgomery	" Montgomery	same	6	50,000		50,000
"	City of Litchfield	same	8	50,000		50,000
Pike	County of Pike	Hannibal & Naples	10	112,000		112,000
"	" "	Louisiana & Pike County	10	100,000		100,000
"	Township of Pittsfield	same	10	19,758		19,758
"	" Newburg	same	10	12,242		12,242
Platt	" Blue Ridge	Danville, Urbana, Bloomington & Pekin	10	81,900		81,900
Peoria	" Brimfield	Dixon, Peoria & Hannibal	10	75,000		75,000
"	" Elmwood	same	10	75,000		75,000
"	City of Peoria	Peoria & Rock Island	7	21,000		21,000
Rock Island	Township of Rock Island	Rockford Rock Island & St. Louis	8	50,000		50,000
"	" Moline	same	8	50,000		50,000
"	" Canoe Creek	same	10	8,000		8,000
Schuyler	County of Schuyler	Rock Island & Alton	5	23,000		23,000
"	" "	same	6	14,000		14,000
"	" "	Peoria & Hannibal	6	73,000		73,000
"	Township of Browning	Rockford, Rock Island & St. Louis	10	20,000		20,000
"	" Frederick	same	8	5,000		5,000
"	" "	same	10	5,000		5,000
Sangamon	County of Sangamon	Springfield & Illinois Southeastern	8	50,000		50,000
"	Township of Springfield	same	10	30,000		30,000
"	City of Springfield	Springfield, Pana & Northwestern	10	87,000		87,000
Stark	Township of Osceola	Dixon, Peoria & Hannibal	10	60,000		60,000
"	" Penn	same	10	50,000		50,000
"	" Essex	same	10	25,000		25,000
"	" Wyoming	same	10	10,000		10,000
St. Clair	City of Belleville	Belleville & O'Fallon	10	50,000		50,000
"	" "	Belleville & Southern Illinois	10	40,000		40,000
"	Inc. town of New Athens	same	6	21,000		21,000
"	" Freeburg	same	6	15,000		15,000
"	" Mascoutah	St. Louis & Southeastern	10	50,000		50,000
Scott	County of Scott	Rockford, Rock Island & St. Louis	10	50,000		50,000
"	Inc. town of Winchester	same	10	30,000		30,000
Tazewell	County of Tazewell	Danville, Urbana, Bloomington & Pekin	10	25,000		25,000
"	City of Pekin	same	10	17,500		17,500
"	Township of Pekin	same	10	15,000		15,000
"	" Mackinaw	same	10	18,000		18,000
"	" Tremont	same	10	12,000		12,000
"	" Elm Grove	same	10	7,000		7,000

Statement—Continued.

County.	By whom issued.	Railroad Aided.	Rate of Int.	Amount Registered.		
				Under act 1869.	Under act 1865.	Total.
Vermilion	Township of Danville	Danville, Urbana, Bloomington & Pekin	10	$70,000	....	$70,000
Wayne	County of Wayne	Illinois Southeastern	7	200,000	....	200,000
"	Township of Lamard	same	10	10,000	....	10,000
"	" Bedford	same	10	10,000	....	10,000
"	" Jasper	same	10	5,000	....	5,000
"	" Big Mound	same	10	5,000	....	5,000
Washington	County of Washington	St. Louis & Southeastern	7	200,000	....	200,000
Warren	Township of Lenox	Rockford, Rock Island & St. Louis	8	10,000	....	10,000
"	" Roseville	same	8	33,000	....	33,000
"	" Swan	same	8	35,000	....	35,000
"	" Ellison	same	8	5,000	....	5,000
"	" Monmouth	same	8	25,000	....	25,000
"	" Spring Grove	same	8	20,000	....	20,000
"	" Sumner	same	8	5,000	....	5,000
Totals				$5,080,215	$1,375,400	$6,455,615

* Also registered under act of 1865.

No. 15.

Statement of the condition of State Banks on the 30th November, 1870.

CUMBERLAND COUNTY BANK.

Securities—Legal Tender Notes	$365 00
Circulation outstanding	315 00

The following banks have withdrawn their securities in accordance with an act entitled "An act to amend the general banking law, so as to permit the withdrawal of securities in certain cases," approved February 28, 1867:

BANK OF BLOOMINGTON.
BANK OF GALENA.
HOME BANK, Elgin.
McLEAN COUNTY BANK, Bloomington.
MARINE BANK, Chicago.
TREASURY BANK, Chicago.
SYCAMORE BANK.

No. 16.

Statement of the aggregate assessment of property in this State for the year 1870.

Personal Property.	Number.	Average value.	Assessed value.
Horses	875,009	$28 66	$25,081,419
Neat cattle	1,578,015	9 22	14,555,331
Mules and asses	83,546	34 55	2,886,677
Sheep	1,484,236	69	994,610
Hogs	2,220,651	1 90	4,214,108
Carriages and wagons	282,850	19 51	5,518,002
Clocks and watches	243,803	3 55	866,139
Pianos	12,270	73 01	895,824
Total	....	$171 09	$55,012,110
Goods and merchandize			17,956,837
Bankers', brokers, and stock jobbers' property			630,308
Manufactured articles			2,092,973
Moneys and credits			15,662,951
Value of moneys invested in bonds, stocks, joint stock companies, etc			1,939,032
Value of shares in the capital stock of state and national banks			4,178,181
Unenumerated property			18,448,921
Aggregate			$115,921,313
Deductions			2,907,207
Total assessed value of personal property			$113,014,106

Railroad Property.	Average value.	Assessed value.	
Lands (acres, 46,935)	$26 59	$1,248,016	
Town lots (No. 2,860)	530 43	1,517,036	
Main track (3,585 miles, 4,063 feet)	2,632 52	9,439,623	
Side track (52 miles, 5,054 feet)	458 11	24,260	
Rolling stock	1,656 74	5,940,676	
Other personal property	....	1,072,530	
Total assessed value of railroad property			19,242,141

Real Estate—Lands.	Number of acres.	Av. value per acre.	Assessed value.	
Improved lands	23,814,062	$5 87	$139,816,512	
Improvements on lands	....	1 95	46,475,904	
Total	....	7 82	$186,292,416	
Unimproved lands	9,805,187	4 05	39,596,714	
Total	33,619,249	6 72	$225,889,130	
Total assessed value of lands and improvements on same	....	....	....	225,889,130

Statement—Continued.

Real Estate—Town and City Lots.	Number of lots.	Av. value per lot.	Assessed value.	Assessed value.
Amount brought forward				$358,145,377
Improved town and city lots	267,514	$174 07	$46,567,129	
Improvements on town and city lots		195 41	52,273,592	
Total		369 48	$98,840,721	
Unimproved town and city lots	336,901	68 40	23,045,605	
Total	604,415	201 66	$121,186,326	
Total assessed value of town and city lots, and improvements on same				121,886,326
Total assessed value of all taxable property				$480,031,703
Acres in cultivation—wheat				2,456,632
" " corn				5,367,364
" " other field products				2,017,073
Total acres in cultivation				9,831,069

No. 17.

STATEMENT of rates per cent. of addition and deduction, determined by the State Board of Equalization, on assessment, 1870.

Counties.	Personal Property.		Railroads.		Lands.		Town and City Lots.	
	Add.	Ded.	Add.	Ded.	Add.	Ded.	Add.	Ded.
City of Quincy	....	1	0	0	....	....	....	4
Adams	58	....	0	0	....	2	...	4
Alexander	....	41	0	0	....	30	....	54
Bond	....	21	0	0	3	....	....	1
Boone	54	....	0	0	34	...	30	....
Brown	11	....	0	0	31	....	....	4
Bureau	19	....	0	0	....	3	....	7
Calhoun	....	41	0	0	...	43	....	24
Carroll	23	....	0	0	25	....	25	....
Cass	....	6	0	0	19	....	26	....
Champaign	....	11	0	0	....	9	....	4
Christian	....	....	0	0	....	5	....	4
Clark	27	...	0	0	27	...	....	4
Clay	....	4	0	0	8	....	4	....
Clinton	....	1	0	0	....	11	...	15
Coles	....	1	0	0	....	6	....	4
Cook	....	8	0	0	....	6	....	4
Crawford	11	....	0	0	11	....	....	4
Cumberland	17	....	0	0	17	....	....	4
DeKalb	4	....	0	0	....	....	....	4
DeWitt	7	....	0	0	....	18	.. .	4
Douglas	....	37	0	0	....	29	....	44
DuPage	19	....	0	0	....	24	...	4
Edgar	....	3	0	0	....	24	....	28
Edwards	....	36	0	0	....	11	6	....
Effingham	41	....	0	0	41	. ..	....	4
Fayette	....	5	0	0	33	....	....	4
Ford	....	10	0	0	9	....	5	....
Franklin	....	8	0	0	8	....	4	....
Fulton	3	....	0	0	6	....	6	....
Gallatin	....	46	0	0	....	32	....	36
Greene	4	....	0	0	18	...	4	....
Grundy	11	....	0	0	36	....	32	....
Hamilton	....	16	0	0	....	17	....	21
Hancock	10	.. .	0	0	....	2	....	6
Hardin	....	26	0	0	....	13	....	17
Henderson	...	19	0	0	9	....	26	....
Henry	....	14	0	0	....	21	....	29
Iroquois	11	...	0	0	30	....	56	....
Jackson	....	16	0	0	14	....	....	4
Jasper	12	....	0	0	12	....	....	4
Jefferson	....	11	0	0	30	....	....	4
Jersey	...	6	0	0	....	16	....	4
JoDaviess	30	....	0	0	34	....	34	....
Johnson	..	31	0	0	14	....	....	4
Kane	19	....	0	0	....	20	....	4
Kankakee	....	4	0	0	34	..	30	....
Kendall	27	....	0	0	4	....	....	....
Knox	....	....	0	0	...	3	...	4
Lake	55	....	0	0	24	....	20	....
LaSalle	39	....	0	0	72	....	68	....
Lawrence	....	1	0	0	....	6	6	....

Statement—Continued.

Counties.	Personal Property.		Railroads.		Lands.		Town and City lots.	
	Add.	Ded.	Add.	Ded.	Add.	Ded.	Add.	Ded.
Lee	35	....	0	0	27	....	23	....
Livingston	13	....	0	0	5	....	1	....
Logan	....	16	0	0	....	14	....	18
Macon	9	....	0	0	....	15	6	....
Macoupin	4	....	0	0	....	2	....	4
Madison	....	31	0	0	....	19	..	4
Marion	....	1	0	0	8	....	4	....
Marshall	4	...	0	0	....	5	....	8
Mason	19	...	0	0	14	....	10	....
Massac	....	30	0	0	...	34	....	38
McDonough	72	...	0	0	2	....	16	....
McHenry	29	....	0	0	33	....	29	....
McLean	....	13	0	0	6	....	26	....
Menard	6	....	0	0	6	...	2	....
Mercer	5	....	0	0	....	18	26	....
Monroe	....	1	0	0	....	2	...	34
Montgomery	19	....	0	0	19	....	15	....
Morgan	....	1	0	0	....	9	....	4
Moultrie	29	....	0	0	20	....	....	4
Ogle	45	...	0	0	27	..	26	....
Peoria	....	2	0	0	....	26	....	27
Perry	....	1	0	0	27	....	...	32
Piatt	....	12	0	0	....	11	....	15
Pike	.	1	0	0	20	....	16	....
Pope	....	11	0	0	20	....	....	14
Pulaski	....	23	0	0	..	56	....	34
Putnam	4	....	0	0	....	....	3	....
Randolph	....	16	0	0	12	....	...	4
Richland	21	....	0	0	....	5	....	54
Rock Island	7	....	0	0	10	....	6	....
Saline	....	11	0	0	6	....	2	....
Sangamon	....	7	0	0	....	3	....	14
Schuyler	....	11	0	0	15	....	....	4
Scott	....	21	0	0	9	....	....	4
Shelby	....	...	0	0	20	....	....	4
Stark	7	....	0	0	9	....	5	....
St. Clair	4	....	0	0	5	..	1	....
Stephenson	38	....	0	0	26	...	26	....
Tazewell	11	....	0	0	....	11	....	4
Union	....	43	0	0	....	27	....	31
Vermilion	....	16	0	0	....	7	...	24
Wabash	....	21	0	0	..	9	....	13
Warren	2	....	0	0	8	...	....	12
Washington	37	....	0	0	2	....	47	...
Wayne	....	4	0	0	49	....	6	....
White	....	23	0	0	23	....	....	14
Whiteside	48	....	0	0	48	.	44	....
Will	17	....	0	0	....	7	...	11
Williamson	....	....	0	0	14	....	...	4
Winnebago	27	....	0	0	....	5	....	7
Woodford	....	....	0	0	...	...	...	2

No. 18.—STATEMENT, *showing the Assessed and Equalized Valuations of the several classes of Property for State Taxation, for the year* 1870.

DISTRICTS....	COUNTIES.	Personal Property.		Railroad Property.	Lands.		Town and City Lots.		Total Valuations.	
		Total assessed value.	Total equalized value.	Total assessed and equalized value.	Total assessed value.	Total equalized value.	Total assessed value.	Total equalized value.	Assessed.	Equalized.
1	Alexander........	$595,133	$351,128	....	$395,643	$276,950	$2,011,145	$925,127	$3,001,921	$1,553,205
	Pulaski...........	303,695	233,845	....	638,764	281,056	215,035	141,923	1,157,494	656,824
	Massac...........	334,998	234,499	....	608,691	401,736	291,728	180,870	1,235,417	817,106
	Union	877,796	500 344	....	1,328,881	979,083	308,565	212,910	2,515,242	1,683,337
	Johnson..........	333,848	230,355	....	622,494	709,643	42,354	40,660	998,696	980,658
	Pope.............	325,685	289,815	....	580,588	696,706	98,927	85,077	1,005,150	1,071,598
	Hardin...........	152,800	113,072	....	315,982	274,904	41,165	34,167	509,947	422,143
	Gallatin..........	681,630	368,080	....	944,280	642,076	351,340	224,858	1,977,200	1,235,014
	Saline............	285,262	253,883	....	686,091	727,256	47,438	48,387	1,018,791	1,029,526
2	Hamilton.........	386,470	324,635	....	996,238	826,878	68,272	53,935	1,450,980	1,205,448
	Wabash..........	378,270	298,833	....	714,002	649,742	153,641	133,668	1,245,913	1,082,243
	Clay.............	654,135	627,970	$112,590	1,180,621	1,275,071	235,838	245,272	2,183,184	2,260,003
	Wayne...........	563,715	541,166	65,070	1,140,546	1,699,414	72,127	76,455	1,841,458	2,382,105
	Richland.........	426,794	520,051	101,865	1,267,754	1,204,366	299,489	137,765	2,098,922	1,964,067
	Edwards..........	567,455	368,171	....	779,732	693,961	109,849	116,440	1,457,036	1,178,572
	White............	667,017	513,603	....	975,039	1,199,298	218,463	187,878	1,860,519	1,900,779
	Lawrence	492,961	489,021	103,095	1,230,160	1,156,350	93,683	99,304	1,920,899	1,847,770
3	Williamson.......	387,034	387,034	....	837,102	954,296	50,774	48,743	1,274,910	1,390,073
	Franklin	375,368	345,339	....	768,808	829,773	38,055	39,577	1,181,781	1,214,680
	Jackson..........	809,216	679,741	375,180	1,468,085	1,673,617	428,571	411,428	3,081,056	3,139,970
	Jefferson.........	935,033	832,179	69,915	1,370,761	1,781,989	170,662	163,836	2,546,371	2,847,919
	Randolph.........	949,397	797 493	....	1,881,418	2,107,188	576,279	553,228	3,407,094	3,457,909
	Monroe...........	484,260	479,417	....	1,214,950	1,190,651	208,405	134,247	1,902,615	1,804,315
4	Perry.............	487,115	482,744	....	1,002,012	1,272,555	263,070	178,888	1,702,197	1,884,187

	Washington	456,702	625,082	70,000	1,998,457	2,088,826	288,784	350,989	2,758,898	3,079,947
	Clinton	584,227	528,885	144,420	1,930,429	1,718,082	277,097	285,582	2,886,178	2,626,919
	Marion	961,882	952,214	118,040	1,715,066	1,852,271	747,100	776,984	3,542,038	3,699,509
	Fayette	581,767	552,679	4,689	1,410,405	1,875,889	260,285	249,826	2,257,096	2,688,088
	Bond	741,480	585,769	66,060	1,518,855	1,568,906	212,948	210,814	2,588,888	2,426,549
5	St. Clair	1,154,857	1,200,531	722,506	5,220,606	5,481,686	1,981,088	2,000,848	9,078,507	9,405,521
	Madison	3,886,620	2,336,768	482,998	6,171,540	4,998,947	2,466,270	2,867,619	12,507,428	10,186,882
6	Jersey	658,689	642,668	60,666	2,166,689	1,820,019	468,193	449,465	2,379,237	2,972,818
	Calhoun	356,120	210,111	....	783,981	418,869	26,084	19,824	1,116,185	648,804
	Greene	819,985	852,784	224,000	2,148,545	2,535,283	306,790	319,062	3,499,320	3,981,129
	Scott	344,123	271,857	115,937	950,398	1,035,984	205,326	197,118	1,615,784	1,620,841
	Pike	1,887,184	1,873,812	154,606	2,715,093	3,258,112	421,020	488,383	4,677,903	5,274,413
7	Macoupin	1,450,077	1,508,080	374,795	4,080,126	3,949,528	1,096,883	1,053,008	6,951,881	6,885,406
	Montgomery	776,520	924,059	146,348	2,370,847	2,821,308	481,028	553,176	3,774,738	4,444,891
	Christian	947,275	947,275	104,983	3,149,813	2,992,322	422,399	405,503	4,624,470	4,450,083
	Shelby	1,307,298	1,307,298	113,762	2,289,398	2,747,278	383,658	368,312	4,094,111	4,536,645
8	Effingham	402,539	567,580	115,960	1,072,621	1,512,896	151,709	145,641	1,742,829	2,341,577
	Jasper	351,756	398,967	....	894,102	1,001,894	32,658	31,847	1,278,511	1,426,708
	Crawford	411,280	456,521	....	1,074,160	1,192,318	79,262	76,092	1,564,702	1,724,931
	Cumberland	410,910	480,765	....	901,307	1,054,529	64,734	62,145	1,376,951	1,597,439
	Clark	567,125	720,249	75,000	1,278,831	1,624,115	179,786	172,595	2,100,742	2,591,959
	Edgar	1,372,312	1,331,143	106,945	3,433,027	2,609,101	399,057	287,321	5,311,341	4,334,510
9	Coles	1,224,363	1,212,119	135,000	2,237,518	2,103,309	708,521	680,180	4,305,447	4,180,608
	Douglas	1,023,334	644,700	....	2,100,810	1,491,575	378,885	212,176	3,503,029	2,348,451
	Champaign	1,414,705	1,259,087	246,066	3,907,266	3,555,612	644,953	619,155	6,212,990	5,679,920
	Vermilion	2,026,590	1,702,336	208,117	4,313,133	4,011,214	901,376	685,046	7,449,216	6,606,713
	Iroquois	956,022	1,061,184	54,397	2,903,804	3,774,945	324,781	506,658	4,239,004	5,397,184
	Ford	388,032	344,729	13,016	1,484,734	1,618,360	156,980	164,829	2,037,762	2,140,934
10	McLean	2,814,230	2,448,380	613,423	5,677,859	6,018,531	1,707,296	2,151,193	10,812,808	11,231,527
	DeWitt	662,197	708,551	19,549	1,969,741	1,615,188	170,186	163,379	2,821,673	2,506,667
	Piatt	581,903	512,075	118,174	2,018,310	1,796,296	193,369	164,364	2,911,756	2,590,909
	Moultrie	370,449	477,879	16,585	1,060,292	1,272,350	59,690	57,302	1,507,016	1,824,116
	Macon	1,104,395	1,203,791	120,399	3,381,209	2,831,528	904,094	958,340	5,460,097	5,114,058

Statement—Continued.

Districts......	Counties.	Personal Property.		Railroad property.	Lands.		Town and City Lots.		Total Valuations.	
		Total assessed value.	Total equalized value.	Total assessed and equalized value.	Total assessed value.	Total equalized value.	Total assessed value.	Total equalized value.	Assessed.	Equalized.
11	Tazewell..........	$1,310,606	$1,454,773	$211,220	$3,616,467	$3,218,656	$944,522	$906,741	$6,082,815	$5,791,390
	Logan	1,337,488	1,123,448	158,117	3,419,159	2,240,477	684,383	561,235	5,599,147	4,783,277
	Sangamon	3,228,889	3,002,867	503,612	5,925,621	5,747,852	4,103,549	3,529,052	13,761,671	12,783,383
12	Menard............	564,392	598,256	75,455	1,385,111	1,468,218	198,315	202,281	2,223,273	2,344,210
	Cass	219,129	487,981	44,971	1,495,013	1,779,065	328,130	413,444	2,387,243	2,725,461
	Schuyler..........	778,713	693,055	70,669	1,392,373	1,601,229	212,441	203,943	2,454,196	2,568,896
	Brown	383,968	426,204	104,477	759,693	995,198	162,372	155,877	1,410,510	1,681,756
	Morgan	1,216,524	1,501,359	303,134	4,111,429	3,741,400	2,005,840	1,925,606	7,936,927	7,471,499
13	Adams	1,049,071	1,657,532	340,518	4,170,989	4,087,569	224,911	215,915	5,785,489	6,301,534
	City of Quincy....	1,637,275	1,620,902	....	717,885	717,885	4,215,446	4,046,828	6,570,606	6,385,615
	Hancock	1,396,217	1,535,839	348,377	3,490,749	3,420,934	722,183	678,852	5,957,526	5,984,002
14	McDonough	813,313	1,398,898	302,444	2,823,954	2,880,433	460,978	534,734	4,400,689	5,116,509
	Henderson	685,555	555,300	379,383	1,584,478	1,672,581	131,969	166,281	2,781,385	2,773,545
	Mercer...........	1,145,411	1,202,682	198,882	2,968,716	2,434,347	375,797	473,504	4,688,806	4,309,415
	Warren	1,294,845	1,320,742	131,351	2,463,221	2,660,279	544,478	479,141	4,433,895	4,591,513
15	Mason	528,370	628,760	93,008	2,068,961	2,358,616	326,831	359,514	3,017,170	3,439,898
	Fulton	1,531,251	1,577,189	393,345	3,623,056	3,840,439	666,558	706,551	6,214,210	6,517,524
	Knox	2,115,531	2,115,531	503,811	3,729,840	3,617,945	1,489,084	1,429,521	7,838,266	7,666,808
16	Peoria	2,536,508	2,485,773	541,366	3,815,887	2,823,756	4,885,786	3,566,624	11,779,542	9,417,519
	Stark	609,426	652,086	126,023	1,298,521	1,415,888	103,387	108,556	2,137,357	2,302,058
	Marshall..........	712,191	740,679	79,297	1,823,266	1,732,108	467,024	429,662	3,081,778	2,981,741
	Putnam	324,767	337,756	32,470	684,275	684,275	73,674	75,884	1,115,186	1,130,387
17	Woodford.........	981,489	981,489	87,300	2,261,124	2,261,124	357,394	350,246	3,687,307	3,680,159

	Livingston........	1,228,708	1,894,000	296,460	4,176,124	4,384,980	580,868	526,177	6,287,160	6,611,657
	LaSalle	1,740,867	2,419,805	445,249	8,670,80[illegible]	6,813,788	1,815,156	2,209,462	7,172,079	11,388,804
18	Kankakee	675,861	648,827	48,008	1,706,776	2,287,080	481,079	560,408	2,856,719	8,589,818
	Grundy...........	688,449	708,678	182,541	1,391,226	1,892,067	858,644	478,410	2,570,860	3,256,696
	Will.............	1,362,965	1,544,669	584,190	4,011,198	3,730,414	1,151,354	1,024,705	7,059,707	6,883,978
	Kendall	502,492	638,165	106,038	1,516,906	1,577,582	141,877	141,877	2,267,813	2,468,662
19	DuPage	595,363	708,482	324,105	2,171,764	1,650,541	311,749	299,279	3,402,981	2,982,407
	Kane.....	1,697,610	2,020,156	396,467	3,640,994	2,912,794	2,829,350	2,716,176	8,564,421	8,045,593
	DeKalb...........	1,015,821	1,056,454	132,025	2,953,839	2,953,839	374,287	359,316	4,475,972	4,501,634
20	Ogle	892,447	1,294,048	60,152	3,010,688	3,823,574	339,519	427,794	4,302,806	5,605,568
	Lee.	786,717	1,062,068	138,079	2,812,822	2,937,284	502,653	618,263	3,740,271	4,755,694
	Whiteside	863,986	1,278,699	330,740	1,964,249	2,907,089	472,754	680,766	3,681,729	5,197,294
21	Bureau.	1,359,284	1,617,548	566,032	4,284,235	4,107,208	573,617	533,464	6,733,168	6,824,252
	Henry.......	1,796,577	1,545,056	424,820	5,058,815	3,996,464	1,139,957	809,369	8,420,169	6,775,709
	Rock Island... ...	1,106,602	1,184,064	408,805	1,606,474	1,767,121	1,211,164	1,283,834	4,333,045	4,643,824
22	Carroll	685,456	843,111	148,215	1,411,347	1,764,184	181,429	226,786	2,426,447	2,982,296
	JoDaviess	939,525	1,221,383	3,500	1,233,872	1,653,388	342,882	459,462	2,519,779	3,337,733
	Stephenson	967,367	1,334,966	146,665	2,364,463	2,979,228	679,827	856,582	4,158,322	5,317,436
23	Winnebago	1,398,830	1,776,514	322,198	2,646,480	2,514,108	1,301,790	1,210,665	5,669,248	5,823,485
	Boone	435,280	670,331	185,743	978,888	1,311,643	181,228	235,590	1,781,048	2,403,307
	McHenry	849,709	1,096,125	391,633	2,026,548	2,695,309	313,494	404,407	3,581,384	4,587,474
	Lake.............	468,237	725,767	144,017	1,322,732	1,640,188	285,312	342,374	2,220,298	2,852,346
24 25	Cook...........	19,624,649	18,054,677	2,958,054	7,776,586	7,309,991	59,789,239	57,397,669	90,148,528	85,720,391
	Totals........	$113,014,106	$113,545,227 113,014,106	$19,242,141	$225,889,130	$230,890,053 225,889,130	$121,886,326	$116,986,637 121,886,326	$480,031,703	$480,664,058 480,031,703
	Surplus.	....	$531,121		Surplus. ...	$5,000,923	Deficit	$4,899,689	Surplus.....	$632,355

FINANCIAL REPORT OF STATE TREASURER.

STATE OF ILLINOIS, TREASURER'S OFFICE,
Springfield, December 15, 1870.

HIS EXCELLENCY, JOHN M. PALMER,
Governor of Illinois.

SIR: In compliance with the law defining the duties of State Treasurer, I have the honor to submit to your consideration the accompanying report of the receipts and disbursements of the Treasury Department, for the fiscal year ending November 30th, 1870.

Balance in the Treasury December 1st, 1869	$1,762,974 70
Amount received from other sources	5,635,774 91
Total amount received	7,398,749 61
Total disbursements	2,895,779 03
Balance in the Treasury December 1st, 1870	$4,502,970 58

The statements hereto appended will give a detailed account of the receipts, expenditures and balances of the several funds. During the year the funded debt has been diminished $229,058 34, leaving the entire debt of the State only $4,890,937 30. Of this amount, $15,136 has been called in by proclamation of the Governor, and not yet presented for payment. Of the remainder, $2,983,304 47 will have matured on the first Monday of January, 1871. The Illinois and Michigan Canal sterling bonds, amounting to $1,072,488 87, matured in July last. These bonds, by their terms, are payable in London, in pounds sterling. As I received from the State only currency, and had no authority of law to purchase coin for payment of principal, I could only offer to the holders of these bonds currency in payment. This was in all cases refused, the holders of the bonds preferring to retain the bonds till the Legislature could meet, and provide for their payment in coin, rather than accept the currency in partial payment, and leave the balance for future adjustment. I think it important that the Legislature act upon this matter, and provide for their redemption in coin at as early a day as practicable.

The remaining bonds, which mature in January, 1871, amounting to $1,910,815 60, are in the usual form, the State agreeing therein to pay ——— dollars. When they were issued, coin was the medium of exchange and only legal tender. Since the passage of the legal tender act, in 1862, the interest upon these bonds has been paid in currency. The holders of the bonds claim that, by the recent decision of the United States Supreme Court, relating to the legal tender act, they are entitled to receive coin in payment of principal and interest. Their payment in coin, at present price of gold, would require an expenditure of about $212,000, for premium on gold, which, added to $117,973 77, the premium of gold required to redeem the sterling bonds, gives $329,973 77 as the increased cost of paying in coin the bonds which mature in January next.

To pay this maturing indebtedness, there is now in the Treasury, and set apart for this express purpose, the State Debt Fund and the Illinois Central Railroad Fund, amounting to $2,582,104 22. It is also expected that, by the first of January, 1871, there will be paid into the Treasury, for these funds, by the Illinois Central Railroad Company, and by the counties which have not yet settled their tax of 1869, about $440,000. The tolls and receipts of the canal, now in the hands of the Canal Trustees, will be sufficient, it is supposed, to cancel the registered Canal Bonds, which, with the premium on gold for their redemption, will amount to about $311,896 — so that, by the first of January next, the money in the Treasury, together with that in the hands of the Canal Trustees, will be sufficient to pay, in coin, all the debt which will then have matured. The remainder of the debt amounts to less than $2,000,000, and matures as follows, to-wit: $60,000 after 1876, $1,268,696 83 after 1877, and the balance, $563,800, after 1879. For the payment of this indebtedness, as it matures, the two mill tax to be collected will amount to about $1,000,000. The Illinois Central Railroad Fund for 1871 and 1872 will amount to nearly $1,000,000 more. There will therefore be sufficient money in the Treasury in 1873, without any further taxation, to pay, in coin, the entire funded debt.

Whether the State shall pay this indebtedness in currency, or coin, is a matter of considerable importance. The decision of the Legislature upon this point will very materially affect the credit and financial standing of the State. I would advise the passage of a law authorizing the Treasurer to purchase coin, with such funds as are set apart for that purpose, for the payment of principal and interest of such portion of the funded debt as matures on and after January 1st, 1871, including the sterling bonds which matured in July, 1870.

In my last annual report I stated that, as the appropriations of the Twenty-sixth General Assembly had been largely in excess of the revenue received for the current year, it had been necessary to advance largely from other funds to pay revenue warrants, in order to preserve the credit of the State and to prevent loss and embarrassment to its creditors and Institutions. In this way I employed the surplus money in the Treasury, till the revenue fund was collected this year, when the money so advanced was returned to the various funds from which the same had been temporarily borrowed. This course worked no prejudice or inconvenience to the State, while, on the contrary, it preserved the credit and saved many thousand dollars to the people.

I cannot close this report without congratulating your Excellency, and through you the people of the State, upon the healthful and prosperous condition of our finances. In a few weeks at farthest the most of the debt, which for years has weighed down our people, will be paid. The small balance remaining unpaid will easily be met, as it matures, without further taxation. The two mill tax ceases with this year. As the burdens are removed from our people, we may reasonably anticipate increased prosperity.

ERASTUS N. BATES,
Treasurer.

TABULAR STATEMENTS.

No. 1. Statement of the 48th installment of interest paid in the city of New York, by the Treasurer, on the State Debt of Illinois.
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No. 16. Statement of the interest paid on the Debt of Mason County, in the city of New York.
No. 17. Statement of the interest paid on the Debt of Dayton Township, LaSalle County, in the city of New York.
No. 18. Statement of interest paid on the Debt of Ottawa Township, LaSalle County, in the city of New York.
No. 19. Statement of the interest paid on the Debt of South Ottawa, Township, LaSalle County, in the city of New York.
No. 20. Statement of the interest paid on the Debt of Evans Township, Marshall County, in the city of New York.
No. 21. Statement of interest paid on the Debt of Brimfield Township, Peoria County, in the city of New York.
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No. 41. Statement of Henderson County Interest Fund.
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No. 43. Statement of Mason County Interest Fund.
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No. 49. Statement of Danville Township (Vermilion County) Interest Fund.
No. 50. Statement of Buda Township (Bureau County) Interest Fund.
No. 51. Statement of Osage Township (LaSalle County) Interest Fund.

No. 52. Statement of Dayton Township (LaSalle County) Interest Fund.

No. 53. Statement of South Ottawa Township (LaSalle County) Interest Fund.

No. 54. Statement of Ottawa Township (LaSalle County) Interest Fund.

No. 55. Statement of Elmwood Township (Peoria County) Interest Fund.

No. 56. Statement of Brimfield Township (Peoria County) Interest Fund.

No. 57. Statement of Evans Township (Marshall County) Interest Fund.

No. 58. Recapitulation of Treasurer's Accounts.

No. 59. Statement in relation to the State Debt, showing the amount of Inscribed Stock and several classes of Coupon Bonds, their numbers and amounts, outstanding December 1st, 1870.

No. 60. Statement of the amounts and kinds of Stock deposited with the Treasurer by the Life Insurance Companies, for the benefit of their Policy Holders.

STATEMENT No. 1.

STATEMENT *of Interest paid on the Debt of the State of Illinois in the city of New York, by Erastus N. Bates, State Treasurer, during the month of January,* 1870.

FORTY-EIGHTH INSTALLMENT.

Paid interest due January, 1870, on $1,584,972 80, new Internal Improvement Stock, issued under act of 1847, at 3 per cent	$47,549 18	
Interest due January, 1870, on $967,388 84, at 3 per cent	29,021 66	$76,570 84
Paid interest due January, 1870, on Illinois and Michigan Canal Bonds, and other bonds, as follows, to-wit:		
18 coupons from $1000 Canal Bonds, of 1841, at $30	$540 00	
20 coupons from $1000 registered Canal Bonds, less 70 per cent., at $9	180 00	
41 coupons from £300 Canal Bonds, payable in London with 10 per cent. Ex., at $44	1,804 00	
549 coupons from £300 registered Canal Bonds, payable in London with 10 per cent. Ex., less 70 per cent., at $13 20	7,246 80	
22 coupons from £100 Canal Bonds, payable in London, with 10 per cent. Ex., at $14 66	322 52	
405 coupons from £100 registered Canal Bonds, payable in London with 10 per cent. Ex., less 70 per cent., at $4 40.	1,782 00	11,875 32
99 coupons from $1000 Bonds Thornton Loan, issued in 1861, at $30	$2,970 00	
45 coupons from $1000 Bonds Refunded Stock, Normal University, 1879, at $30	1,350 00	
64 coupons from $1000 Bonds Refunded Stock, 1869, at $30	1,920 00	
260 coupons from $1000 Bonds Refunded Stock, 1870, at $30	7,800 00	
56 coupons from $1000 Bonds Refunded Stock, 1876, at $30	1,680 00	
258 coupons from $1000 Bonds Refunded Stock, 1877, at $30	7,740 00	23,460 00
217 coupons from $1000 Bonds of War Loan, issued in 1861, at $30	$6,510 00	
244 coupons from $500 Bonds of War Loan, issued in 1861, at $15	3,660 00	
650 coupons from $100 Bonds of War Loan, issued in 1861, at $15	1,950 00	12,120 00
		$124,026 16

STATEMENT No. 2.

STATEMENT *of Expenses attending the payment of Interest in the City of New York, during the month of January,* 1870.

FORTY-EIGHTH INSTALLMENT.

Paid advertising notice of payment in the New York Tribune ..	$67 50	
Paid advertising notice of payment in the New York Post	44 55	
Paid advertising notice of payment in the New York Journal of Commerce..	25 20	
Paid for a check book..	14 00	
Paid for express on a box of books to and from New York	10 00	
Paid for passage of Treasurer and Assistant to and from New York, and for board, stationery, stamps, &c..............	650 00	
Paid for lock, key, and repairs on box, and stamp	16 90	
Paid for premium on $11,155 82 gold, at 20½ per cent	2,286 84	
		$3,114 99
Paid for advertising the Governor's proclamation of Nov. 23rd, 1869, for payment of State Indebtedness in January, 1870, called in under said proclamation, in the New York Daily Tribune	$180 00	
Paid for advertising same in the New York Daily Post........	144 00	
Paid for advertising same in the New York Daily Journal of Commerce.....	86 40	
		410 40
		$3,525 39

STATEMENT No. 3.

STATEMENT *of Interest paid on the Debt of the State of Illinois, in the City of New York, by Erastus N. Bates, Treasurer, during the month of July,* 1870.

FORTY-NINTH INSTALLMENT.

Paid interest due July, 1870, on $1,586,833 33 New Internal Improvement Stock, issued under act of 1847, at 3 per cent.	$47,605 00	
Paid interest due July, 1870, on $968,695 35 of Interest Bonds, issued under act 1847, at 3 per cent..................	29,060 86	$76,665 86
Paid interest due July, 1870, on Illinois and Michigan Canal Bonds, and bonds as follows, to-wit:		
13 coupons from $1000 Canal Bonds of July, 1841, at $30...	$390 00	
17 coupons from $1000 Canal Bonds of July, 1841, registered, less 80 per cent., at $6..................................	102 00	
43 coupons from £300 Canal Bonds of July, 1841, payable in London, with 10 per cent. exchange, at $44 20...........	1,900 60	
541 coupons from £300 Canal Bonds of July, 1841, payable in London, registered, less 80 per cent., at $8 84.........	4,782 44	
701 coupons from £225 Canal Bonds of July, 1841, payable in London, registered, with exchange, at $66 30..........	46,476 30	
878 coupons from £225 Canal Bonds of July, 1841, payable in London, registered, less 77½ per cent., at $16 57½......	8,585 82	
19 coupons from £225 Canal Bonds of July, 1841, payable in New York City, at $60....................	1,140 00	
16 coupons from £225 Canal Bonds of July, 1841, payable in New York City, registered, less 77½ per cent., at $15......	240 00	
29 coupons from £100 Canal Bonds of July, 1841, payable in London, with 10 per cent., at $14 73....................	427 17	
406 coupons from £100 Canal Bonds of July, 1841, payable in London, registered, less 80 per cent., at $2 95....	1,185 90	65,230 23
67 coupons from $1000 Bonds of Thornton Loan, issued in 1861, at $30.................................	$2,010 00	
26 coupons from $1000 Bonds of Refunded Stock, Normal University, of 1879, at $30...........................	780 00	
243 coupons from $1000 Bonds of Refunded Stock of 1870, at $30	7,290 00	
36 coupons from $1000 Bonds of Refunded Stock of 1876, at $30	1,080 00	
147 coupons from $1000 Bonds of Refunded Stock of 1877, at $30	4,410 00	15,570 00
73 coupons from $1000 Bonds of War Loan, issue of 1861, at $30	$2,190 00	
153 coupons from $500 Bonds of War Loan, issue of 1861, at $15	2,295 00	
470 coupons from $100 Bonds of War Loan, issue of 1861, at $3	1,410 00	5,895 00
		$163,361 09

STATEMENT No. 4.

STATEMENT *of Expenses attending the payment of Interest in the City of New York, during the month of July*, 1870.

FORTY-NINTH INSTALLMENT.

Paid for notice of payment in New York Tribune	$45 00	
" " " " Evening Post........	40 50	
" " " " Journal of Commerce.	22 50	
" Check Book..	14 00	
" Express charged on box of books to and from New York..	11 50	
Paid for passage of Treasurer and Assistant to and from New York City, board, stationery, stamps, etc.................	650 00	
Paid for premium on $64,286 43 gold, at 12½ per cent	8,035 80	
		$8,819 30

STATEMENT No. 5—COIN ACCOUNT.

STATEMENT ***showing the amount of Gold and Silver on hand December 1st, 1869, and amounts purchased thereafter, and payments on account of Sterling Interest, to December 1st, 1870.***

	DR.		
Dec. 1, 1869	To balance of Silver	$528 09	
Jan. 1, 1870	" gold purchased for interest on State Debt	11,155 32	
July 1, "	" " " "	64,286 43	$75,969 84
	CR.		
Feb. 1, 1870	By paid 5 coupons, Registered Canal Stock, of 3£, with exchange, at 10 per cent., at $5 30	$26 50	
Mar. 1, "	" 2 coupons, Registered Canal Stock, of 9£, with exchange, at 10 per cent., at $52 80	105 60	
April 9, "	" 7 coupons, Registered Canal Stock, of 8£, with exchange, at 10 per cent., at $16 50	115 42	
July 7, "	" 3 coupons, Registered Canal Stock, of 13£ 10s, with exchange, at 10 per cent., at $60	180 00	
" "	" 3 coupons, Registered Canal Stock, of 13£ 10s, with exchange, at 10 per cent., at $60	180 00	
" "	" 7 coupons, Registered Canal Stock, of 13£ 10s, with exchange, at 10 per cent., at $66 30	464 10	
" "	" 7 coupons, Registered Canal Stock, of 13£ 10s, with exchange, at 10 per cent., at $66 30	464 10	$1,535 75
July 1, "	" in New York, Interest, in January and July, on State Debt, as per table No. —.	....	75,441 75
			$76,977 50

RECAPITULATION.

DR.		
To Gold purchased	$76,977 50	
" Silver received	528 09	
		$77,505 59
		$77,505 59
CR.		
By Sterling Interest paid in New York	$76,977 50	
" Silver on hand	528 09	
		$77,505 59
		$77,505 59

STATEMENT No. 6.

Statement of the Interest paid on the Debt of Quincy City, Adams County, in the City of New York, by Erastus N. Bates, State Treasurer, during the month of July, 1870.

Paid 682 coupons from $1,000 bonds, at $60	$40,920 00	
" 59 " 500 " 30	1,770 00	
" 184 " 100 " 6	1,104 00	
		$43,794 00
Paid 75 " 1,000 " past due int. at $60	$4,500 00	
" 13 " 500 " " " 30	390 00	
" 73 " 100 " " " 6	438 00	
		5,328 00
		$49,122 00

STATEMENT No. 7.

Statement of Interest and Principal paid on the Debt of Brown County, in the City of New York, by Erastus N. Bates, State Treasurer, during the month of July, 1870.

Paid 6 per cent. Interest, and 5 per cent. of the Principal, due July, 1870, on the following bonds:

49 bonds of $1,000 each, at $107	$5,243 00	
84 " 500 " 50 50	4,242 00	
28 " 100 " 10 10	282 80	
		$9,767 80
6 " 1,000 each, past due interest, at $110	$660 00	
		660 00
		$10,427 80

STATEMENT No. 8.

Statement of the Interest and Principal paid on the Debt of Schuyler County, in the City of New York, by Erastus N. Bates, State Treasurer, during the month of July, 1870.

Paid 6 per cent. Interest, and 5 per cent. of the Principal, due July, 1870, on the following bonds:

13 bonds of $1,000 each, at $107	$1,391 00	
40 coupons from $1,000 bonds, at $60	2,400 00	
22 bonds of $500 each. at $46 25	1,017 50	
66 coupons from $500 bonds, at $30	1,980 00	
44 bonds of $250 each, at $23 12½	1,017 50	
		$7,806 00
1 bond of $250, past due interest, at $23 75	$23 75	
9 coupons of $1,000 bonds past due interest, at $30	270 00	
		293 75
		$8,099 75

STATEMENT No. 9.

Statement of the Interest paid on the Debt of Hancock County, in the City of New York, by Erastus N. Bates, State Treasurer, during the month of July, 1870.

Paid 129 coupons, from $1,000 bonds, due July, 1870, at $60	$7,740 00	
" 78 " " 500 " " " 30	2,340 00	
" 25 " " 100 " " " 6	150 00	
		$10,230 00
Paid 1 " " 1,000 " past due int., at $60	$60 00	
" 1 " " 500 " " " 30	30 00	
		90 00
		$10,320 00

STATEMENT No. 22.

Statement of Interest paid on the Debt of Buda Township, Bureau County, in the city of New York, by Erastus N. Bates, State Treasurer, during the month of July, 1870.

Paid 15 coupons from $1000 bonds, due July, 1870, at $100 ...	$1,500 00	$1,500 00
		$1,500 00

STATEMENT No. 23.

Statement of Interest paid on the Debt of Elmwood Township, Peoria County, in the city of New York, by Erastus N. Bates, State Treasurer, during the month of July, 1870.

Paid 62 coupons from $1000 bonds, due July, 1870, at $100....	$6,200 00	$6,200 00
		$6,200 00

STATEMENT No. 24.

Statement of Collections on account of Revenue, from December 1, 1869, *to December* 1, 1870.

1869.	Dec.	Received on account of taxes assessed in the year of 1867	$192 63	
"	"	Received on account of taxes assessed in the year of 1868	5,397 04	
"	"	Received per order John M. Palmer, Governor, from England	12,986 65	
"	"	Received from Malden Jones, for land purchased in Douglas county	2,080 00	$20,656 32
1870.	Jan.	Received on account of taxes assessed in the year of 1868	$4,280 33	
"	"	Received from John M. Palmer, Governor, from the United States	52,397 69	
"	"	Received from George M. Brinkerhoff, for land purchased	2,219 12	58,897 14
"	Feb.	Received on account of taxes assessed in the year of 1868	$21,994 18	
"	"	Received from sureties of Julius A. Pratt, on judgment	1,754 50	
"	"	Received from Wm. A. Turney, for fine from S. Salomon, of Chicago	1,000 00	
"	"	Received from Wm. E. McCrery, for land purchased	558 50	25,307 18
"	Mar.	Received on account of taxes assessed in the year of 1867	$2,000 00	
"	"	Received on account of taxes assessed in the year of 1869	112,610 48	114,610 48
"	April.	Received on account of taxes assessed in the year of 1869	$92,984 89	
"	"	Received from Alex. Starne, Trustee of Matteson estate, for land sold	17,000 00	109,984 89
"	May.	Received on account of taxes assessed in the year of 1869	$394,297 99	
"	"	Received from Collector of Lake county, on judgment	3,850 00	
"	"	Received from St. Louis, Jacksonville and Chicago Railroad Company	5,700 00	403,847 99
"	June	Received on account of taxes assessed in the year of 1869	$1,024,402 67	1,024,402 67
"	July.	Received on account of taxes assessed in the year of 1869	$842,080 84	842,080 84

Statement No. 24—Continued.

1870.	Aug.	Received on account of taxes assessed in the year of 1869....	$377,348 73	
"	"	Received from Alex. Starne, Trustee Matteson estate, for land sold....	500 00	$377,848 73
"	Sept.	Received on account of taxes assessed in the year of 1869....	$418,641 82	418,641 82
"	Oct.	Received on account of taxes assessed in the year of 1869....	$106,180 95	106,180 95
"	Nov.	Received on account of taxes assessed in the year of 1869....	$122,160 74	
"	"	Received from sale of State lands sold in Tazewell county....	844 15	123,000 89
				$3,626,354 85

STATEMENT No. 25.

Statement of Receipts and Disbursements of the Unknown and Minor Heirs' Fund.

1869.	Dec. 1	To balance....	$5,487 98	
1870.	July 1	To received from James H. Willin, Special Master in Chancery, Brown County Circuit Court, at the September Term, 1868....	49 08	$5,537 06
		CR.		
"	Dec. 1	By balance....		$5,537 06

STATEMENT No. 26.—*Statement of Monthly Receipts of Revenue, Special Taxes, etc.*

Date.	Revenue F'd.	State Debt Fund......	Interest F'd.	School F'd..	Illinois Central Railr'd Fund.......	Unkn'n and Minor H'r Fund......	Hanc'k Co. Int. Fund..	Schuyl'r Co. Int. Fund..	Brown Co. Int. Fund..	Quincy City Int. Fund..	Mercer Co. Int. Fund..	Warsaw City Int. Fund..	Hend'n Co. Int. Fund..
1869 December....	$20,656 83	$26,874 07	$6,620 95	$588 98	....	......	....	....	....	....	....	....	....
1870 January.............	58,897 14	7,786 75	6,882 19	3 67	$254,969 56	.... .	....	....	....	....	....	....	....
" February.............	25,207 18	5,686 10	4,797 75	15 04	....	......	....	....	....	....	....	....	....
" March.......	114,610 48	7,000 00	1,000 00	....	....	......	....	$1,757 50	....	....	....	....	....
" April................	109,964 89	5,009 06	5,108 21	....	....	......	....	185 00	....	....	$2,600 00	....	....
" May.................	403,847 99	19,288 48	8,068 98	....	....	......	....	....	....	....	....	....	....
" June................	1,024,402 67	122,895 90	95,796 16	2,338 98	....	......	$9,709 97	5,906 42	$12,000 00	$50,509 00	148 42	2,902 76	6,574 61
" July................	842,080 84	200,264 97	162,062 69	4,254 99	....	49 08	....	....	451 50	....	....	....	....
" August.............	377,848 78	138,775 72	30,410 85	13,195 17	214,819 56	......	....	....	....	....	....	....	....
" September...........	413,641 82	84,821 47	36,850 94	11,880 70	....	......	....	....	....	....	....	....	....
" October..............	106,180 95	74,308 04	39,425 19	6,928 91	....	......	....	....	....	....	....	....	....
" November..........	128,000 89	90,013 23	25,749 58	118,886 84	....	......	....	....	....	1,666 54	....	....	....
	$3,620,854 85	$781,878 09	$412,772 02	$152,542 78	$469,809 12	$49 08	$9,709 97	$7,848 92	$12,451 50	$52,166 54	$2,748 42	$2,902 76	$6,574 61

STATEMENT No. 26—Continued.

Date.	Pike County Int. Fund..	Mason Co. Int. Fund..	Wayne Co. Int. Fund..	Sanga'n Co. Int. Fund..	Clay County Int. Fund..	Jeffers'n Co. Int. Fund..	Winchester T'p Int'st Fund......	Danville T'p Int. Fund..	Buda T'p Int. Fund..	Osage T'p Int. Fund..	Dayton T'p Int. Fund..	S. Ottawa T. Int. Fund..	Ottawa T'p Int. Fund..	Elmwo'd T'p Int. Fund..	Brimfi'ld T'p Int. Fund..	Evans T'p Int. Fund..	Total.
1869 Dec...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$54,239 68
1870 Jan....	. ...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	328,500 94
" Feb ...	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	85,736 07
" March.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	124,807 98
" April..	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	122,887 16
" May ...	$10,000 00	$2,415 70	....	....	....	....	....	....	....	....	....	....	....	....	....	$4000 00	447,620 45
" June ..	5,000 00	....	$11,305 22	$1577 50	....	....	....	....	....	$2000 00	$1200 00	$3000 00	$15,204 66	$6452 94	$4842 55	254 77	1,884,012 18
" July...	....	....	....	....	$1800 00	$8000 00	....	....	$1500 00	....	....	....	....	....	....	....	1,920,864 97
" Aug....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	775,645 08
" Sept...	....	9,781 59	....	....	....	....	....	$8907 24	....	....	....	....	....	....	....	....	554,638 76
" Oct....	2,231 58	....	....	....	....	....	....	....	....	666 95	$492 28	183 21	1056 81	....	....	....	281,428 87
" Nov....	....	....	....	....	....	....	$8000 00	....	....	....	....	....	....	....	....	....	356,816 58
	$17,231 58	$12,197 29	$11,305 22	$1577 50	$1800 00	$8000 00	$8000 00	$8907 24	$1500 00	$2666 95	$1692 28	$3183 21	$16,060 47	$6452 94	$4842 55	$4254 77	$5,685,774 91

STATEMENT No. 27.—*Statement of Monthly Credits by Auditor's Receipts for Warrants canceled.*

Date.	Rev. Fund..	State Debt Fund......	Interest F'd.	School Fund	Ills. Central R.R. Fund.	Hancock Co. Int. Fund.	Schuyler Co. Int. Fund.	Brown Co. Int. Fund.	Quincy City Int. Fund.	Mercer Co. Int. Fund.	Warsaw City Int. Fund.	Hend'sn Co. Int. Fund.
1869 December	$20,656 24	....	....	$12,585 09	....	....	....	....	....	....	....	....
1870 January	58,896 60	$58,387 90	$141,889 12	2,995 89	....	....	....	....	....	....	....	....
" February	95,818 06	3,511 90	3,648 92	16,821 18	....	....	....	....	....	....	....	....
" March	114,604 71	1,000 50	....	3 592 62	....	....	....	....	....	....	....	....
" April	109,982 14	3,082 17	....	7,226 83	....	....	....	....	....	....	....	....
" May	408,918 04	826 03	....	....	....	....	....	....	....	....	....	....
" June	579,548 28	....	....	1,629 78	....	....	....	....	....	....	....	....
" July	144,573 48	2,559 70	1,086 01	661 62	....	....	....	....	....	....	....	....
" August	187,289 90	7,989 28	179,869 80	49 29	$1000 66	$10,526 87	$8,218 60	$10,653 86	$50,121 82	$2782 06	$1878 02	$3792 40
" September	229 862 95	....	....	4,873 58	....	....	....	....	....	....	....	....
" October	128,808 79	2,872 93	248 55	107,890 61	....	....	....	....	....	....	....	2850 00
" November	214,115 44	....	....	12,647 80	....	....	....	....	....	....	....	....
	$2,167,059 63	$79,650 36	$326,687 40	$170,468 79	$1000 66	$10,526 87	$8,218 60	$10,653 86	$50,121 82	$2782 06	$1878 02	$6642 40

STATEMENT No. 27—Continued.

Date.	Pike County Int. Fund.	Mason Co. Int. Fund.	Wayne Co. Int. Fund.	Sanga'n Co. Int. Fund.	Clay County Int. Fund.	Buda Tp. Int. Fund.	Osage Tp. Int. Fund.	Dayton Tp. Int. Fund.	S. Ottawa T. Int. Fund.	Ottawa Tp. Int. Fund.	Elmw'd Tp. Int. Fund.	Brimfield Tp Int. Fund.	Evans Tp. Int. Fund.	Total.
1869 December	....	....	....	....	....	....	....	....	....	....	....	....	....	$88,241 38
1870 January	....	....	....	....	....	....	....	....	....	....	....	....	....	262,119 51
" February	....	....	....	....	....	....	....	....	....	....	....	....	....	49,285 06
" March	....	....	....	....	....	....	....	....	....	....	....	....	....	119,197 88
" April	....	....	....	....	....	....	....	....	....	....	....	....	....	120,241 14
" May	....	....	....	....	....	....	....	....	....	....	....	....	....	404,244 07
" June	....	....	....	....	....	....	....	....	....	....	....	....	....	581,178 06
" July	....	....	....	....	....	....	....	....	....	....	....	....	....	148,880 81
" August	$18,599 57	$2181 15	$8487 05	$1577 50	$1797 85	$1500 00	$2000 00	$1200 00	$2980 60	$14,959 28	$6200 00	$4600 00	$4042 57	474,196 58
" September	....	2 00	....	....	....	....	....	....	....	....	....	....	....	234,738 53
" October	....	....	....	....	....	....	22 89	14 85	....	....	....	....	....	241,698 12
" November	....	....	....	....	....	....	....	....	....	....	....	....	....	226,762 74
	$18,599 87	$2183 15	$8487 05	$1577 50	$1797 85	$1500 00	$2022 89	$1214 85	$2980 60	$14,959 28	$6200 00	$4600 00	$4042 57	$2,895,779 08

STATEMENT No. 28.—*Revenue Fund.*

ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.*

Dr.											Cr.
1869.	Dec.	1	To balance..................	....	$2,735 83	1870.	Jan.	1	By warrants canceled Dec. '69	$20,656 24	
1870.	Jan.	1	received in Dec. 1869....	$20,656 32		"	Feb.	1	" " Jan. '70	58,896 60	
"	Feb.	1	" Jan. 1870....	58,897 14		"	March	1	" " Feb. "	25,808 06	
"	March	1	" Feb. "	25,307 18		"	April	1	" " Mar. "	114,604 71	
"	April	1	" Mar. "	114,610 48		"	May	1	" " Apr. "	109,982 14	
"	May	1	" Apr. "	109,984 89		"	June	1	" " May "	403,918 04	
"	June	1	" May "	403,847 99		"	July	1	" " June "	579,548 28	
"	July	1	" June "	1,024,402 67		"	Aug.	1	" " July "	144,573 48	
"	Aug.	1	" July "	842,080 84		"	Sept.	1	" " Aug. "	187,289 90	
"	Sept.	1	" Aug. "	877,843 73		"	Oct	1	" " Sept "	229,862 95	
"	Oct.	1	" Sept. "	418,641 82		"	Nov.	1	" " Oct. "	128,808 79	
"	Nov.	1	" Oct. "	106,180 95		"	Dec.	1	" " Nov. "	214,115 44	
"	Dec.	1	" Nov. "	128,000 89							$2,167,059 63
					3,610,354 85				By balance..............	....	1,446,031 05
					$3,613,090 68	....			....	....	$3,613,090 58

STATEMENT No. 29.—*State Debt Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1869. Dec.	1	To balance	....	$1,114,153 67	1870. Feb.	1	By warrants canceled in Jan.	$58,387 90	
1870 Jan.	1	To received in December ...	$26,374 07		" March	1	" " Feb..	3,511 90	
" Feb.	1	" January......	7,786 75		" April	1	" " M'ch.	1,000 50	
" March	1	" February	5,636 10		" May	1	" " April.	3,032 17	
" April	1	" March	7,000 00		" June	1	" " May..	326 03	
" May	1	" April........	5,009 06		" Aug.	1	" " July .	2,559 70	
" June	1	" May	19,288 48		" Sept.	1	" " Aug .	7,989 23	
" July	1	" June	123,095 20		" Nov.	1	" " Oct..	2,872 93	
" Aug.	1	" July	200,264 97						$79,680 36
" Sept.	1	" August	188,775 72						
" Oct.	1	" September ...	84,821 47						
" Nov	1	" October	74,308 04						
" Dec.	1	" November ...	90,013 23						
				781,873 09			By balance....	....	1,816,346 40
				$1,896,026 76	....		....	....	$1,896,026 76

STATEMENT No. 30.—*Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1869.	Dec.	1	To balance	....	$235,904 70	1870.	Feb.	1.	By warrants canceled in Jan.	$141,839 12	
1870.	Jan.	1	To received in December	$6,620 25		"	March	1.	" " Feb.	3,648 92	
"	Feb.	1	" January	6,882 12		"	Aug.	1.	" " July	1,086 01	
"	March	1	" February	4,797 75		"	Sept.	1.	" " Aug.	179,869 80	
"	April	1	" March	1,000 00		"	Nov.	1.	" " Oct.	248 55	
"	May	1	" April	5,108 21							$326,687 40
"	June	1	" May	8,068 28							
"	July	1	" June	95,796 16							
"	Aug.	1	" July	162,062 69							
"	Sept.	1	" August	30,410 85							
"	Oct.	1	" September	26,850 94							
"	Nov.	1	" October	39,425 19							
"	Dec.	1	" November	25,749 58					By balance	....	321,989 32
					412,772 02						
					$648,676 72	....			....	....	$648,676 72

STATEMENT No. 31.—*School Fund.*

Dr. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Iliinois.* **Cr.**

1869.	Dec. 1	To balance	....	$97,737 82	1870.	Jan. 1	By warrants canceled Dec. '69	$12,585 09	
1870.	Jan. 1	received in December	$588 98		"	Feb. 1	" " Jan. '70	2,995 89	
"	Feb. 1	" January......	3 67		"	March 1	" " Feb. '70	16,821 18	
"	March 1	" February. ...	15 04		"	April 1	" " Mar. '70	8,592 62	
"	July 1	" June.........	2,888 98		"	May 1	" " April'70	7,226 83	
"	Aug. 1	" July.........	4,254 99		"	July 1	" " June '70	1,629 78	
"	Sept. 1	" August	13,195 17		"	Aug. 1	" " July '70	661 62	
"	Oct. 1	" September....	11,880 70		"	Sept. 1	" " Aug. '70	49 29	
"	Nov. 1	" October	6,923 91		"	Oct. 1	" " Sept. '70	4,873 58	
"	Dec. 1	" November	113,386 84		"	Nov. 1	" " Oct. '70	107,380 61	
				152,542 78	"	Dec. 1	" " Nov. '70	12,647 80	
									$170,463 79
							By balance...............	....	79,816 81
				$250,280 60	....		....	....	$250,280 60

STATEMENT No. 32.—*Railroad Fund.*

Dr. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **Cr.**

1869.	Dec. 1.	To balance..................	....	$296,949 86	1870.	Sept. 1.	By warrants canceled in Aug..	$1,000 66	
1870.	Feb. 1.	received in January......	$254,989 56						$1,000 66
"	Sept. 1.	" August......	214,819 56		1870.	Dec. 1	By balance...	....	765,757 82
				469,809 12					
				$766,758 48	....		....	....	$766,758 48

STATEMENT No. 33.—*Delinquent Land Tax Fund.*

DR.		ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.*							CR.
1869. Dec.	1	To balance	....	$331 06	1870. Dec.	1	By balance	... .	$331 06

STATEMENT No. 34.—*Unknown and Minor Heirs' Fund.*

DR.		ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.*							CR.
1869. Dec.	1	To balance	....	$5,487 98	1870. Dec.	1	By balance	....	$5,537 06
1870. July	1	received from James H. Wallin, Special Master in Chancery, Brown County Circuit Court, at Sept. term, 1869	$49 08	49 08					
				$5,537 06			....	....	$5,537 06

STATEMENT No. 35.—*Hancock County Interest Fund.*

DR.		ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.*							CR.
1869. Dec.	1	To balance	....	$1,340 04	1870. Sept.	1	By warrant canceled in Aug..	$10,526 37	$10,526 37
1870. July	1	received in June.........	$9,709 97	9,709 97	" Dec.	1	balance	....	523 64
				$11,050 01	....		....	....	$11,050 01

STATEMENT No. 36.—*Schuyler County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* CR.

1869.	Dec.	1	To balance	....	$877 13	1870.	Sept.	1	By warrants canceled in Aug.	$8,218 60	
1870.	April	1	" received in March........	$1,757 50							$8,218 60
	May	1	" " " April.........	185 00							
	July	1	" " " June	5,906 42							
					7,848 92	"	Dec.	1	By balance	....	507 45
					$8,726 05	....			....	....	$8,726 05

STATEMENT No. 37.—*Brown County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* CR.

1869.	Dec.	1	To balance	....	$44 59	1870.	Sept.	1	By warrants canceled in Aug.	$10,653 36	
1870.	July	1	" received in June.........	$12,000 00							$10,653 36
"	Aug.	1	" " " July	451 50							
					12,451 50	"	Dec.	1	By balance	....	1,842 73
					$12,496 09	....			....	....	$12,496 09

STATEMENT No. 38.—*City of Quincy Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* CR.

1869.	Dec.	1	To balance	....	$6,587 49	1870.	Sept.	1	By warrants canceled in Aug	$50,121 82	
1870.	July	1	" received in June.........	$50,500 00							$50,121 82
"	Dec.	1	" " " November	1,666 54							
					52,166 54	"	Dec.	1	By balance	....	8,632 21
					$58,754 03	....			....	....	$58,754 03

Statement No. 39.—*Mercer County Interest Fund.*

Dr. ERASTUS N. BATES, State Treasurer, *in account with the State of Illinois.* **Cr.**

1869.	Dec.	1	To balance	....	$171 01	1870.	Sept.	1	By warrant canceled in Aug..	$2,732 06	
1870.	May	1	received in April	$2,600 00							$2,732 06
"	July	1	" June	148 42		"	Dec.	1	By balance	....	187 37
					2,748 42						
					$2,919 43	....			....	....	$2,919 43

Statement No. 40.—*Warsaw City Interest Fund.*

Dr. ERASTUS N. BATES, State Treasurer, *in account with the State of Illinois.* **Cr.**

1869.	Dec.	1	To balance	....	$405 20	1870.	Sept.	1	By warrants canceled in Aug.	$1,878 02	
1870.	July	1	" received in June.........	$2,902 76							$1,878 02
					2,902 76	"	Dec.	1	By balance	....	1,429 94
					$3,307 96	....			....	....	$3,307 96

Statement No. 41.—*Henderson County Interest Fund.*

Dr. ERASTUS N. BATES, State Treasurer, *in account with the State of Illinois.* **Cr.**

1869.	Dec.	1	To balance	....	$309 86	1870.	Sept.	1	By warrants canceled in Aug	$3,792 40	
1870.	July	1	" received in June.........	$6,574 61		"	Nov.	1	" " " Oct..	2,850 00	
					6,574 61						$6,642 40
						"	Dec.	1	By balance	....	242 07
					$6,884 47	....			... .	....	$6,884 47

STATEMENT No. 42.—*Pike County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* CR.

1870.	June	1	To received in May	$10,000 00		1870.	Sept.	1	By warrants canceled in Aug.	$13,599 37	
"	July	1	" " June	5,000 00							$13,599 37
"	Nov.	1	" " October	2,331 53		"	Dec.	1	By balance		3,732 16
					$17,331 53						
					$17,331 53						$17,331 53

STATEMENT No. 43.—*Mason County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* CR.

1870.	June	1	To received in May	$2,415 70		1870.	Sept.	1	By warrants canceled in Aug.	$2,181 15	
"	Oct.	1	" " September	9,781 59		"	Oct.	1	" " Sept.	2 00	
					$12,197 29						$2,183 15
						"	Dec.	1	By balance		10,014 14
					$12,197 29						$12,197 29

STATEMENT No. 44.—*Wayne County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* CR.

1870.	July	1	To received in June	$11,305 22		1870.	Sept.	1	By warrants canceled in Aug.	$8,487 05	
					$11,305 22						$8,487 05
						"	Dec.	1	By balance		7,818 17
					$11,305 22						$11,305 22

STATEMENT No. 45.—*Sangamon County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1870.	July 1.	To received in June....	$1,577 50	$1,577 50	1870.	Sept. 1.	By warrants canceled in Aug	$1,577 50	$1,577 50
				$1,577 50	....		....	... .	$1,577 50

STATEMENT No. 46.—*Clay County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1870.	Aug. 1.	To received in July.........	$1,800 00	$1,800 00	1870.	Sept. 1.	By warrants canceled in Aug.	$1,797 85	$1,797 85
					"	Dec. 1.	By balance...	....	2 15
				$1,800 00	......	......	....	....	$1,800 00

STATEMENT No. 47.—*Jefferson County Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1870.	Aug. 1.	To received in July.........	$8,000 00	$8,000 00	1870.	Dec. 1.	By balance................	$8,000 00	$8,000 00
				$8,000 00	.....	....	....	....	$8,000 00

Statement No. 48.—*Winchester Township (Scott County) Interest Fund.*

Dr. ERASTUS N. BATES, State Treasurer, *in account with the State of Illinois.* **Cr.**

870.	Dec. 1.	To received in November....	$3,000 00	$3,000 00	1870.	Dec. 1.	By balance.......	$3,000 00	$3,000 00
				$3,000 00					$3,000 00

Statement No. 49.—*Danville Township (Vermilion County) Interest Fund.*

Dr. ERASTUS N. BATES, State Treasurer, *in account with the State of Illinois.* **Cr.**

1870.	Oct. 1.	To received in September....	$8,207 24	$8,207 24	1870.	Dec. 1.	By balance...............	....	$8,207 24
				$8,207 24	....		....	....	$8,207 24

Statement No. 50.—*Buda Township (Bureau County) Interest Fund.*

Dr. ERASTUS N. BATES, State Treasurer, *in account with the State of Illinois.* **Cr.**

1870.	Aug. 1	To received in July........	$1,500 00	$1,500 00	1870.	Sept. 1.	By warrants canceled in Aug	$1,500 00	$1,500 00
				$1,500 00	....		....	....	$1,500 00

STATEMENT No. 51.—*Osage Township (La Salle County) Interest Fund.*

Dr. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* Cr.

1870.	July	1	To received in June.........	$2,000 00		1870.	Sept.	1	By warrants canceled in Aug.	$2,000 00	
"	Nov.	1	" " R. R. Int., Oct.	477 60		"	Nov.	1	" " Oct..	22 39	
"	"	1	" " Bond " "	189 35							$2,022 39
					$2,666 95	"	Dec.	1	By balance	....	644 56
					$2,666 95				....	....	$2,666 95

STATEMENT No. 52.—*Dayton Township (LaSalle County) Interest Fund.*

Dr. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* Cr.

1870.	July	1	To received in June.........	$1,200 00		1870.	Sept.	1	By warrants canceled in Aug.	$1,200 00	
"	Nov.	1	" " Bond Int, in Oct.	207 10		"	Nov.	1	" " Oct..	14 85	
"	"	1	" " Surplus Fund in Oct	285 18							$1,214 85
					$1,692 28	"	Dec.	1	By balance	....	477 43
					$1,692 28	....			....	....	$1,692 28

STATEMENT No. 53.—*South Ottawa Township (La Salle County) Interest Fund.*

Dr. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* Cr.

1870.	July	1	To received in June.........	$3,000 00		1870.	Sept.	1	By warrants canceled in Aug.	$2,930 60	
"	Nov.	1	" " Bond Int. in Oct	151 27							$2,930 60
"	"	1	" " Surplus tax "	30 94							
					$3,182 21	"	Dec.	1	By balance	....	251 61
					$3,182 21	....			....	....	$3,182 21

STATEMENT No. 54.—*Ottawa Township (La Salle County) Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1870.	July	1	To received in June.........	$15,004 66		1870.	Sept.	1	By warrants canceled in Aug.	$14,959 23	$14,959 23
"	Nov.	1	" " October......	1,056 81	$16,061 47	"	Dec.	1	By balance................	....	1,102 24
					$16,061 47	....			....	....	$16,061 47

STATEMENT No. 55.—*Elmwood Township (Peoria County) Interest Fund.*

DR. ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.* **CR.**

1870.	July	1	To received in June.........	$6,452 24	$6,452 24	1870.	Sept.	1	By warrants canceled in Aug.	$6,200 00	$6,200 00
						"	Dec.	1	By balance................	....	252 24
					$6,452 24	....			....	....	$6,452 24

STATEMENT No. 56—*Brimfield Township (Peoria County) Interest Fund.*

Dr.			ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.*								Cr.
1870.	July	1	To received in June.........	$4,842 55		1870.	Sept.	1	By warrants canceled in Aug.	$4,600 00	$4,600 00
					$4,842 55	"	Dec.	1	By balance	....	242 55
					$4,842 55						$4,842 55

STATEMENT No. 57—*Evans Township (Marshall County) Interest Fund.*

Dr.			ERASTUS N. BATES, STATE TREASURER, *in account with the State of Illinois.*								Cr.
1870.	June	1	To received in May..........	$4,000 00		1870.	Sept.	1	By warrants canceled in Aug.	$4,042 57	
"	July	1	To received in June.........	254 77		"	Dec.	1			$4,042 57
					$4,254 77				By balance................	....	212 20
					$4,254 77						$4,254 77

Names of Funds.	Balances in the Treasury Dec. 1, 1869.	Am't received from Dec. 1, 1869, to Dec. 1, 1870.	Total.
Revenue Fund	$2,735 83	$3,620,354 85	$3,623,090 68
State Debt Fund	1,114,153 67	781,873 09	1,896,026 76
Interest Fund	235,904 70	412,772 02	648,676 72
School Fund	97,737 82	152,542 78	250,280 60
Illinois Central Railroad Fund	296,949 36	469,809 12	766,758 48
Delinquent Land Tax Fund	331 06	....	331 06
Unknown and Minor Heirs Fund	5,487 98	49 08	5,537 06
Hancock County Interest Fund	1,340 04	9,709 97	11,050 01
Schuyler County Interest Fund	876 13	7,848 92	8,725 05
Brown County Interest Fund	44 55	12,451 50	12,496 05
Quincy City Interest Fund	6,527 49	52,166 54	58,694 03
Mercer County Interest Fund	171 01	2,748 42	2,919 43
Warsaw City Interest Fund	405 20	2,902 76	3,307 96
Henderson County Interest Fund	309 86	6,574 61	6,884 47
Pike County Interest Fund	....	17,231 58	17,231 58
Mason County Interest Fund	....	12,197 29	12,197 29
Wayne County Interest Fund	....	11,305 22	11,305 22
Sangamon County Interest Fund	....	1,577 50	1,577 50
Clay County Interest Fund	....	1,800 00	1,800 00
Jefferson County Interest Fund	....	8,000 00	8,000 00
Winchester Township (Scott County) Interest Fund	....	3,000 00	3,000 00
Danville Township (Vermilion County) Interest Fund	....	8,207 24	8,207 24
Buda Township (Bureau Co.) Int. Fund	....	1,500 00	1,500 00
Osage Township (LaSalle Co.) Int. Fund	....	2,666 95	2,666 95
Dayton Township (LaSalle Co.) Int. Fund	....	1,692 28	1,692 28
South Ottawa Township (LaSalle County) Interest Fund	....	3,182 21	3,182 21
Ottawa Township (LaSalle Co.) Int. Fund	....	16,061 47	16,061 47
Elmwood Township (Peoria Co.) Int Fund	....	6,452 24	6,452 24
Brimfield Township (Peoria Co.) Int. Fund	....	4,842 55	4,842 55
Evans Township (Marshall Co.) Int. Fund	....	4,254 77	4,254 77
	$1,762,974 70	$5,635,774 91	$7,398,749 61

Names of Funds.	Disbursem'ts from Dec. 1, 1869, to Dec. 1, 1870.	Balances in the treasury Dec. 1, 1870.	Total.
Revenue Fund	$2,167,059 63	$1,456,031 05	$3,623,090 68
State Debt Fund	79,680 36	1,816,346 40	1,896,026 76
Interest Fund	326,687 40	321,989 32	648,676 72
School Fund	170,463 79	79,816 81	250,280 60
Illinois Central Railroad Fund	1,000 66	765,757 82	766,758 48
Delinquent Land Tax Fund	....	331 06	331 06
Unknown and Minor Heirs Fund	....	5,537 06	5,537 06
Hancock County Interest Fund	10,526 37	523 64	11,050 01
Schuyler County Interest Fund	8,218 60	506 45	8,725 05
Brown County Interest Fund	10,653 36	1,842 69	12,496 05
Quincy City Interest Fund	50,121 82	8,572 21	58,694 03
Mercer County Interest Fund	2,732 06	187 37	2,919 43
Warsaw City Interest Fund	1,878 02	1,429 94	3,307 96
Henderson County Interest Fund	6,692 40	242 07	6,884 47
Pike County Interest Fund	13,599 87	3,632 16	17,231 58
Mason County Interest Fund	2,183 15	10,014 14	12,197 29
Wayne County Interest Fund	3,487 05	7,818 17	11,305 22
Sangamon County Interest Fund	1,577 50	....	1,577 50
Clay County Interest Fund	1,797 85	2 15	1,800 00
Jefferson County Interest Fund	....	8,000 00	8,000 00
Winchester Township (Scott County) Interest Fund	....	3,000 00	3,000 00
Danville Township (Vermilion County) Interest Fund	....	8,207 24	8,207 24
Buda Township (Bureau Co.) Int. Fund	1,500 00	....	1,500 00
Osage Township (LaSalle Co.) Int. Fund	2,022 39	644 56	2,666 95
Dayton Township (LaSalle Co.) Int. Fund	1,214 85	477 43	1,692 28
South Ottawa Township (LaSalle County) Interest Fund	2,930 60	251 61	3,182 21
Ottawa Township (LaSalle Co.) Int. Fund	14,959 23	1,102 24	16,061 47
Elmwood Township (Peoria Co.) Int. Fund	6,200 00	252 24	6,452 24
Brimfield Township (Peoria Co.) Int. Fund	4,600 00	242 55	4,842 55
Evans Township (Marshall Co.) Int. Fund	4,042 57	212 20	4,254 77
	$2,895,779 03	$4,503,970 58	$7,398,749 61

Amount on hand December 1st, 1869, and amount received to December 1st, 1870	$7,398,749 61
Amount paid out from December 1st, 1869, to December 1st, 1870	2,895,779 03
Total amount of all funds in Treasury, December 1st, 1870	$4,503,970 58

Statement No. 59.

Statement in relation to the State Debt, showing the amount of inscribed stock, and the several classes of coupon bonds, their numbers and amounts, outstanding December 1, 1870.

Kind of stocks, etc.	Amount.
Inscribed stock—New Internal Improvement Stock, payable after 1870	$1,607,811 20
“ “ “ Interest Bonds, “ 1877	980,696 83
Coupon bonds—Two bonds Internal Improvement Stock, one of Jan 2, 1838, No. 1022, and one of May 1, 1840, No. 86, payable after 1870..........	2,000 00
Two hundred and seventy-nine bonds refunded stock, payable after 1870—Nos. 1 to 13 inclusive, 16, 21, 22, 28, 39, 41, 42, 43, 44, 46, 47, 49, 55, 60 to 66 inclusive, 68, 69, 71 to 85 inclusive, 87, 89, 90, 91, 93, 94, 97 to 102 inclusive, 109, 110, 113, 115, 119, 122 to 125 inclusive, 127, 128, 132, 139, 140, 143 to 149 inclusive, 154, 157 to 163 inclusive, 167, 175, 176, 180, 181, 182, 183, 185, 186, 188, 190, 191, 192, 196, 197, 202, 205, 206, 207, 216, 219, 220, 221, 222, 229, 230, 231, 232, 243, 244, 245, 246, 248, 249, 250, 251, 255, 260, 261, 262, 264, 265, 271, 273, 274, 275, 281, 287, 294, 296, 297, 302 to 312 inclusive, 318, 319, 320, 321, 322, 328, 329, 330, 331, 332, 333, 339 to 351 inclusive, 353, 354, 355, 356, 357, 363, 364, 366, 367, 369, 370, 371, 372, 373, 381, 382, 397, 398, 403 to 410 inclusive, 412, 417, 418, 419, 420, 421, 422, 423, 424, 426, 477, 478, 479, 480, 484 to 493 inclusive, 499, 500, 501, 502, 504, 505, 506, 511, 512, 522 to 530 inclusive, 545, 547, 548, 549, 550, 551, 554, 555, 556, 557, 564, 565, 566, 569 to 582 inclusive, 586, 587, 588, 589, 590, 591	279,000 00
Sixty bonds Refunded Stock, payable after 1876—Nos 3, 4, 5, 6, 7, 8, 9, 10, 17, 18, 19, 20, 21, 24, 25, 28, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 53, 62, 63, 69, 70, 71, 72, 73, 74, 76, 77, 78, 80, 81, 82, 86, 88, 89, 90, 91, 92, 94, 95, 99, 101, 102, 104, 105	60,000 00
Two hundred and eighty-eight bonds Refunded Stock, payable after 1877—Nos. 1, 9, 10, 16, 18, 28, 29, 30, 31, 34, 38, 39, 40, 43, 48, 50, 51, 52, 54, 55, 56, 58, 61, 62, 63, 64, 72, 73, 75, 79, 80, 85, 88, 90, 91, 92, 93, 95, 97, 98, 101, 102, 106. 108. 112, 113, 115, 116, 117, 118, 119, 127, 134, 135, 136, 137, 138, 149, 152, 154, 156 to 161 inclusive, 163, 165 to 176 inclusive, 178, 181, 182, 185, 200, 201, 202, 203, 214, 215, 217, 219 to 230, inclusive, 239 to 247 inclusive, 251 to 259 inclusive, 262, 263, 264, 266, 268, 270, 271, 272, 273, 275, 277, 278, 279, 284 to 288 inclusive, 290, 292, 294, 296, 297, 298, 299, 308, 309, 312, 313, 314, 315, 317, 323 to 328 inclusive, 335, 336, 337, 339, 340, 343 to 348 inclusive, 350, 355, 363 to 368 inclusive, 373, 374, 375, 377, 382 to 387 inclusive, 389 to 411 inclusive, 432 to 436 inclusive, 466, 467, 468, 476 to 491 inclusive, 494 to 521 inclusive, 524 to 529 inclusive, 536 to 542 inclusive, 557 to 567 inclusive, 577, 578.....	288,000 00
Forty-five Normal University bonds, payable after 1879—Nos. 7 to 20 inclusive, 22 to 26 inclusive, 30 to 37 inclusive, 39 to 43 inclusive, 50, 51, 53 to 63 inclusive..	45,000 00
One hundred and three Thornton Loan Bonds, payable after 1879—Nos. 5, 6, 8, 9, 10, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 28, 30, 31, 32, 33, 38, 41, 42, 44, 45, 46, 47, 50, 51, 52, 53, 58, 64, 65, 66, 67, 68, 70 to 78 inclusive, 87, 89, 92, 94, 95, 96, 97, 98, 102, 103, 104, 106, 108, 114, 119, 120, 123 to 128 inclusive, 130, 131, 132, 133, 135, 137, 139, 140, 141, 143, 144, 148, 149, 151, 152, 154, 155, 156, 157, 158, 160 to 164 inclusive, 166, 168, 171 to 177 inclusive..............................	103,000 00
Two hundred and twenty-two $1000 War Bonds, payable after 1879—Nos 9, 10, 14, 15, 25 to 56 inclusive, 64, 77, 82 to 88 inclusive, 90, 91, 101, 102, 106, 115, 116, 117, 120, 130, 131, 135, 141, 173 to 178 inclusive, 180, 184, 198, 207 to 219 inclusive, 223, 224, 225, 252, 282, 291, 292, 293, 307, 308, 310, 311, 320 to 328 inclusive, 330 to 334 inclusive, 337, 338, 339, 343, 344, 347, 427, 447, 448, 450, 451, 464 to 473 inclusive, 484 to 493 inclusive, 498, 499, 573, 575, 586, 587, 588, 611, 619 to 623 inclusive, 632, 642, 655, 658, 659, 662, 663, 664, 669, 707, 709 to 714 inclusive, 723, 729, 730, 748, 749, 750, 811, 836, 841, 842, 845, 846, 853, 854,	

Statement—Continued.

Kind of stocks, etc.	Amount.
855, 859, 862, 885, 887, 895, 896, 909, 917, 919, 926, 932, 936, 949, 959, 953, 954, 961 to 971 inclusive, 985 to 990 inclusive, 992, 993, 994, 995, 1027, 1028, 1029, 1039	$222,000 00
Two hundred and fifty-five $500 War Bonds, payable after 1879—Nos. 13 to 23 inclusive, 30 to 36 inclusive, 38, 40, 41, 46, 54, 55, 65, 66, 72, 82, 83, 84, 106, 241 to 248 inclusive, 256 to 270 inclusive, 287, 288. 309, 311, 312, 314, 318, 320, 321, 325, 332, 243, 345, 347, 348, 349, 350, 371, 372, 373, 374, 387, 391, 397, 398, 399, 401, 406, 408, 417 to 424 inclusive, 426, 427, 428, 438, 469, 473, 474, 488, 489, 490, 491, 500, 501, 503, 504, 505, 506, 510, 517 to 521 inclusive, 525 to 529 inclusive, 585 to 589 inclusive, 591, 596, 631, 633 to 676 inclusive, 680, 689, 694, 700, 701, 703 to 708 inclusive, 723, 732, 733, 741, 743, 745, 746, 766, 767, 768, 769, 771, 772, 778, 779, 782, 784 to 788 inclusive, 794, 795 796, 803, 806, 807, 808, 811 to 815 inclusive, 817, 820, 821, 822, 824, 825, 826, 841, 842, 844, 847, 849, 851, 858, 863 to 870 inclusive, 872, 875, 876, 877, 884, 885, 886, 887, 916, 917, 940, 946 to 952 inclusive	127,500 00
Six hundred and seventy-three War Bonds, payable after 1879—Nos. 26, 27, 34, 35, 36, 45, 46, 47, 48, 50, 51, 55, 59, 81, 143, 171, 172, 173, 183–189, 191–195, 199, 209, 279–286, 288, 325, 330, 336–345, 350, 353, 364, 365, 396, 397, 404, 407, 409, 492, 493, 494, 547, 550, 651, 652, 654, 655, 656, 665, 668, 669, 670, 711–716, 718, 743, 745, 746, 747, 748, 753, 809–813, 976, 979, 980, 981, 982, 997–1006, 1019, 1020, 1037, 1105, 1106–1122, 1140–1144, 1169–1173, 1305–1313, 1323, 1324, 1330, 1395–1399, 1401–1410, 1461–1471, 1492–1498, 1531, 1532, 1533, 1562, 1567, 1568, 1570, 1586, 1587, 1595–1604, 1627–1631, 1639, 1729, 1846–1861, 1867–1871, 1878, 1879, 1881, 1898–1904, 1909, 1917–1930, 1937, 1942, 2015–2019, 2025–2029, 2072, 2073, 2104–2125, 2148, 2149, 2155–2159, 2161, 2162, 2163, 2164, 2193–2199, 2239, 2240, 2311, 2435–2442, 2444, 2518, 2519, 2586, 2590, 2602, 2609, 2618, 2712, 2713, 2714, 2716, 2718, 2722, 2731–2735, 2782, 2788, 2962. 2963, 2964, 3046–3087, 3164–3168, 3248, 3249, 3250, 3251, 3252, 3313, 3314, 3315, 3328–3332, 3354, 3395–3399, 3422, 3448, 3484, 3496–3506, 3519–3538, 3578, 3582, 3679, 3680, 3692, 3757, 3766–3770, 3775, 3782–3791, 3901, 3902, 4075, 4086, 4203–4252, 4282–4296, 4308–4315, 4322–4334, 4341–4345, 4352, 4411, 4414, 4415, 4416, 4417, 4418, 4531–4560, 4626, 4631–4640, 4708, 4709, 4710, 4736, 4761–4796, 4966, 4967, 4970, 4972, 4977	67,300 00
Nineteen $1000 Canal Bonds, July 1, 1841, payable after 1870—Nos. 8, 10, 19, 26, 33, 34, 42, 55, 66, 74, 103, 107, 115, 123, 128, 129, 190, 199, 200	19,000 00
Twenty-four same class of bonds, registered—Nos. 41, 47, 49, 50, 54, 84, 85, 89–94, 118, 133–137, 191, 192, 193, 195, 196	4,800 00
Twenty-five £225 Canal Bonds, payable in New York, 1870—Nos. 1005, 1007, 1008, 1011, 1025, 1036, 1037, 1039, 1040, 1041, 1043, 1056, 1065, 1066, 1067, 1068, 1073, 1074, 1078, 1087. 1093, 1097, 1098, 1099, 1100	25,000 00
Twenty same class of bonds, registered—Nos. 1004, 1010, 1012, 1015, 1018, 1023, 1027, 1031, 1033, 1034, 1044, 1046, 1051, 1060, 1071, 1079, 1083, 1088, 1090, 1091	4,000 00
Twenty-nine £100 Canal Bonds, payable in London after 1879—Nos. 3–7, 10–13, 27, 33–39, 45–52, 74	12,888 88
Four hundred and eight same class of bonds, registered—Nos. 1, 2, 8, 9, 28–32, 40, 41, 53–73, 57–450	26,266 66
Forty-three £300 Canal Bonds, payable in London, 1870—Nos. 81, 85–91, 145–151, 170–186, 212–216, 536–541	57,333 33
Five hundred and forty-nine same class of bonds, registered—Nos. 6–77, 79, 80, 82, 83, 84. 92–144, 152–169, 187–211, 217–533, 542–600	146,400 00
Six hundred and ninety-seven £225 Canal Bonds, payable in London, 1870—Nos. 79–140, 142–152, 155–180, 182, 183, 184, 190–248, 668–883, 885–1008, 1014–1039, 1042–1052, 1059, 1060, 1062, 1064, 1065, 1066, 1068–1077, 1079–1089, 1104–1113, 1126–1137, 1146–1153, 1167, 1169, 1171–1173, 1201–1285, 1295–1305	697,000 00

Statement—Continued.

Kind of stocks, etc.	Amount.
Five hundred and eighteen same class of bonds, registered—Nos. 1,-78, 141, 185-189, 249-306, 308-667, 1010-1013, 1018, 1070, 1172, 1286-1294.. ..	$103,600 00
State Bonds called in by Governor's proclamation, not yet surrendered:	
Proclamation Nov. 15, 1868.—1 bond Refunded Stock, 1860, No 28, 4½ months interest to be allowed $22 50	15,136 00
Proclamation Feb. 15, 1868.—10 Canal bonds, 1860, dated July 1, 1837, No. 591, 592, 871-878, 1½ month's interest, $7 50..	
Proclamation Feb. 15, 1868.—2 Canal Bonds, 1860, dated July 1, 1847, No. 724, 890, 1½ month's interest, $7 50.....	
Proclamation Jan. 4, 1869.—2 bonds Interest Stock, No. 2599, $1,000; No. 2600, $1,136; interest 4 days, $1 42........................	
	$4,890,937 30

STATEMENT No. 60.

Statement of the Amounts and kinds of Stock deposited with the Treasurer by Life Insurance Companies, for the benefit of their Policy Holders.

Name of Companies.	Kinds of Stock.		
The International Life Insurance Co	Notes and Mortgages....	$100,133 00	$100,133 00
The Great Western Life Insurance Co.	" "	100,500 00	100,500 00
The Mutual Life Insurance Co......	" "	96,100 00	121,100 00
" " " "	United States Bonds....	25,000 00	
The Safety Deposit Life Insurance Co.	Deeds of Trust.	100,000 00	100,000 00
The Republic Life Insurance Co	Notes and Mortgages....	100,000 00	100,000 00
The Lincoln Life Insurance Co.	Certificate of Stock.....	100,000 00	100,000 00
The National Life Insurance Co.....	Deeds of Trust........	97,708 33	101,208 33
" " " "	United States Bonds.....	3,500 00	
The Teutonic Life Insurance Co	Notes and Mortgages....	101,264 00	101,264 00
The Chicago Life Insurance Co.	" "	90,510 00	101,510 00
" " " "	United States Bonds	11,000 00	
			$925,715 33

TRANSACTIONS

OF THE

DEPARTMENT OF AGRICULTURE

OF THE

STATE OF ILLINOIS,

FOR THE YEAR 1871.

STATE BOARD OF AGRICULTURE FOR 1871 AND 1872.

President........................DAVID A. BROWN........................Bates.
Secretary........................A. M. GARLAND........................Springfield.
Treasurer........................JOHN W. BUNN........................Springfield.
Ex-President........................WM. KILE........................Paris.

VICE-PRESIDENTS :

State at Large—	John P. Reynolds	Chicago.	7th District—	J. R. Scott	Champaign.
1st District—	A. H. Dolton	Dolton Station.	8th "	S. D. Fisher	Atlanta.
2d "	James Herrington	Geneva.	9th "	D. W. Vittum, Jr.	Canton.
3d "	C. H. Rosenstiel	Freeport.	10th "	M. C. Goltra	Jacksonville.
4th "	Geo. Edmunds, Jr	Sonora	11th "	C. W. Webster	Benton.
5th "	A. J. Dunlap	Galesburg.	12th "	D. B. Gillham	Alton.
6th "	Emory Cobb	Kankakee.	13th "	D. T. Parker	Cairo.

SUPERINTENDENTS OF DEPARTMENTS.

Class A—Cattle........................Mr. REYNOLDS.
Class B—Horses........................Mr. COBB.
Class C and E—Sheep and Poultry........................Mr. HERRINGTON.
Class D—Hogs........................Mr. VITTUM.
Class F—Mechanics {Section 1, Inside of Hall........................Mr. GOLTRA.
Class F—Mechanics {Section 2, Outside of Hall........................Mr. EDMUNDS.
Class G—Farm Products........................Mr. PARKER.
Class H, I and L—Horticulture, Fine Arts, and Natural History........................Mr. DOLTON.
Class K—Textile Fabrics........................Mr. WEBSTER.
D. B. GILLHAM........................General Superintendent of Grounds and Chief of Police.
J. R. SCOTT........................Marshal of the Ring.
S. D. FISHER........................Superintendent of Forage and Stalls
Messrs. BROWN, KILE and WEBSTER........................Reception Committee.
Messrs. ROSENSTIEL and DUNLAP........................Auditing Committee.
(In Charge of Tickets, Gates, Permits, and Gate Police.)
Messrs. BROWN, REYNOLDS, HERRINGTON, ROSENSTIEL, EDMUNDS, COBB, GOLTRA and KILE........................Committee of Arrangements.
Messrs. HERRINGTON, VITTUM and FISHER..Committee to visit and report upon Farms.

LIST OF COUNTIES

COMPOSING THE SEVERAL CONGRESSIONAL DISTRICTS IN THE STATE OF ILLINOIS, FROM WHICH MEMBERS OF THE STATE BOARD OF AGRICULTURE WILL BE HEREAFTER CHOSEN.

First District—The First, Second, Third, Fourth, Fifth, Sixth and Seventh Wards of the city of Chicago, the towns of Hyde Park, Lake, Lyons, Riverside, Lemont, Palos, Worth, Calumet, Orland, Bremen, Thornton, Rich and Bloom, in Cook county, and the county of DuPage.

Second District—The Eighth, Ninth, Tenth, Eleventh, Twelfth, Thirteenth, Fourteenth and Fifteenth Wards of the city of Chicago.

Third District—The Sixteenth, Seventeenth, Eighteenth, Nineteenth and Twentieth Wards of the city of Chicago, the towns of Cicero, Proviso, Jefferson, Leyden, Lake View, Evanston, Niles, Maine, Elk Grove, Schaumberg, Hanover, Barrington, Palatine, Wheeling, Northfield and New Trier, in the county of Cook, and the county of Lake

Fourth District—Kane, DeKalb, McHenry, Boone and Winnebago.

Fifth District—Stephenson, JoDaviess, Carroll, Whiteside and Ogle.

Sixth District—Lee, Bureau, Putnam, Henry and Rock Island.

Seventh District—LaSalle, Kendall, .Grundy and Will.

Eighth District—Kankakee, Iroquois, Ford, Livingston, Woodford and Marshall.

Ninth District—Stark, Peoria, Knox and Fulton.

Tenth District—Mercer, Henderson, Warren, Hancock, McDonough and Schuyler.

Eleventh District—Adams, Brown, Pike, Calhoun, Greene and Jersey.

Twelfth District—Scott, Morgan, Cass, Menard, Sangamon and Christian.

Thirteenth District—Mason, Tazewell, McLean, Logan and DeWitt.

Fourteenth District—Macon, Piatt, Champaign, Douglas, Coles, and Vermilion.

Fifteenth District—Edgar, Clark, Cumberland, Moultrie, Shelby, Effingham, Jasper, Crawford and Lawrence.

Sixteenth District—Montgomery, Fayette, Bond, Clinton, Washington, Marion and Clay.

Seventeenth District—Macoupin, Madison, St. Clair and Monroe.

Eighteenth District—Randolph, Perry, Jackson, Union, Williamson, Johnson, Pope, Massac, Pulaski and Alexander.

Nineteenth District—Richland, Wayne, Edwards, Wabash, Jefferson, Franklin, Hamilton, White, Saline, Gallatin and Hardin.

TREASURER'S REPORT FOR 1871.

ILLINOIS STATE AGRICULTURAL SOCIETY,

In account with JOHN W. BUNN, TREASURER.

	Cr.		
1870.			
Jan. 5.	By balance	$8,471 18	
‘‘	amount received from State	8,000 00	
Sept. 30.	‘‘ ‘‘ at Du Quoin Fair	12,515 25	
‘‘	‘‘ ‘‘ of Du Quoin Agricultural Society	1,000 00	
Dec. 30.	‘‘ ‘‘ for interest	200 00	
			$25,186 43
	Dr.		
1870.	To expenses of Board at winter meetings	497 25	
	To traveling expenses	1,158 95	
	To amount paid for agricultural papers	195 00	
	‘‘ ‘‘ postage	165 21	
	‘‘ ‘‘ printing	830 85	
	‘‘ ‘‘ stationery	115 95	
	‘‘ ‘‘ office expenses	178 84	
	‘‘ ‘‘ office fixtures	133 30	
	‘‘ ‘‘ express charges	188 90	
	‘‘ ‘‘ hotel expenses at Fair	432 50	
	‘‘ ‘‘ meals for committee men, etc	264 45	
	‘‘ ‘‘ music	200 00	
	‘‘ ‘‘ hay	555 75	
	‘‘ ‘‘ work on Fair Grounds	375 00	
	‘‘ ‘‘ hauling water and sprinkling	191 75	
	‘‘ ‘‘ livery	81 25	
	‘‘ ‘‘ Assistant Superintendents	372 85	
	‘‘ ‘‘ police	532 25	
	‘‘ ‘‘ clerks for Secretary at Fair	254 85	
	‘‘ ‘‘ ‘‘ Treasurer ‘‘	228 10	
	‘‘ ‘‘ gate keepers	235 00	
	‘‘ ‘‘ ribbons	118 00	
	‘‘ ‘‘ ice water and barrels	118 10	
	‘‘ ‘‘ use of bedding and furniture	187 85	
	‘‘ ‘‘ Secretary's salary	2,131 53	
	‘‘ ‘‘ Treasurer's ‘‘	330 30	
	‘‘ ‘‘ rent	337 50	
	‘‘ ‘‘ premiums	10,060 46	
	‘‘ ‘‘ balance	4,764 69	
			$25,186 43

JOHN W. BUNN, *Treasurer.*

SPRINGFIELD, *January* 4, 1872.

REPORT.

To his Excellency the Governor :

SIR : In pursuance of "An Act to create a Department of Agriculture in the State of Illinois," approved April 15, 1871, we have the honor to hand you the accompanying summary of the Transactions of the State Board of Agriculture for the year 1871.

The year just closed has been characterized by an extreme drouth, extending not only to all parts of this State, but throughout those States that have, until recently, been designated Western. The capacity of our soil to resist drouth and still yield a fair return for the labor of the husbandman, has been tested as never before, and demonstrated beyond the expectations of the most sanguine believer in the resources of Illinois Though the product per acre of the grain crop may have fallen somewhat short of the annual average, the increased acreage has brought the aggregate fully up to the highest point attained in former years. The absence of the usual rain fail has been more noticeable in a shortened grass crop—pastures and meadows falling considerably below their average annual yield. The prices of most of the products have ruled below those for the year 1870. Taking all the facts together, though the year just closed has not added as much to the wealth of the agricultural classes as some of its predecessors, it leaves them in better circumstances than they were at the close of the year 1870.

In a population so pre-eminently agricultural as that of Illinois is, and for all time must continue to be, any cause which affects the grain crops, in respect to quantity or price, is the concern of all classes. Appreciating this, the State Board of Agriculture has endeavored to encourage a more general application of science to agriculture. Premiums offered have elicited valuable papers upon manures, and the manipulation of soils, with reference to particular crops; also for deep and surface drainage, and their effects upon the soil in both wet and dry seasons. An increase in improved ditching machinery is already apparent at the State and local fairs, and the beneficial results of its employment in all portions of the State may be confidently looked for.

There are very many among the friends of the agriculturist who have never abated their faith in the final success of the efforts of mechanical genius to adapt steam-propelled machinery to plowing and hauling, and many other purposes for which the horse has heretofore been the farmer's main dependence. It would seem that the good time for which these enthusiasts have so long waited is near at hand. The inventive genius of the country seems largely turned toward the practical and economical employment of steam power on the farm. There are on file in the office of the Secretary of the State Board of Agriculture the names and addresses of more than twenty parties in the United States who are experimenting upon the steam plow and motor. Of these four are in our own State, and public trials with at least two of the latter give promise of success in the very near future. To aid these inventors and builders in introducing their machines to the notice of farmers and business men, the Board of Agriculture has decided to donate $100 toward the expenses of a public trial and exhibition of each steam machine for plowing and road purposes, at the Fair of 1872. If the Legislature would offer a liberal reward for a successful machine of the character above indicated, such action would, without doubt, result in great benefit to the agriculture of the State. The propriety of so doing is worthy the attention of our incoming legislators.

The question of an adequate water supply is one of the most serious with which the farmers of Illinois have to contend. As the area of cultivated lands yearly grows wider, streams and springs that were relied on without disappointment for years, diminish their flow, and often disappear altogether. Wells that for many recurring seasons were equal to all demands, are not to be longer depended upon for their former supply. The success of artesian wells has been so complete in the northern portions of the State, the hope that a supply may be secured by reaching the geological formation in which water is found, at points more central and southern, seems quite reasonable. The expense of experiments in this direction is such as to deter private capital in the absence of the certainty of success. The immense advantage that would result from a successful solution of the water problem, would seem to make experiments at the public expense worthy the consideration of the General Assembly. Boring at several points in the State, differing in their geological characteristics, could be prosecuted under the direction of the State Geologist, without adding very greatly to the duties of that officer, or the expense of the department under his direction.

If "he is a benefactor who causes two blades of grass to grow where but one grew before," much more is the man entitled to our thanks who, by research and experiment, converts what has been deemed a pest and incumbrance into a source of revenue. Mr. James H. McConnell of Sangamon county, has, for a year or two past, prosecuted experiments with the Indian Mallow (*Abutilon Avacennæ*), variously known as "stamp weed," "velvet leaf," "butter print," "Mormon weed," etc., and has succeeded in obtaining from it a surprising quantity of strong fiber, which, to all appearances, is suitable for those general purposes for which hemp is now almost exclusively used, and it can doubtless be made to take the place of jute in articles for which it is employed. Experiments in the manufacture of paper from the weed have been highly satisfactory. At the State Fair for 1871, ropes manufactured from this new fiber were shown, and received the State Society's first premium. Attention is called to the report of the special committee appointed to examine the raw and manufactured specimens of this fiber. The Indian Mallow has heretofore been known to the farmer only as an exceedingly troublesome weed, taking almost exclusive possession of entire fields in the face of persistent efforts to exterminate it, and a discovery that looks toward its utilization is well worthy our attention and encouragement.

Under the action of the twenty-seventh General Assembly at its first session, the Executive Committee, controlling the affairs of the State Agricultural Society, was merged into a State Board of Agriculture, and the Society, as such, passed out of existence. To bring within the reach of all an idea of the labors performed and the good accomplished by the far-seeing and unselfish men who organized and labored for the success of the Illinois State Agricultural Society, for the nineteen years of its existence, its proceedings have been epitomized in this report. Though this was not the first attempt to establish a State Agricultural Society, it was the first organization to receive aid or recognition from the State, and the first to hold a State Fair.

Compared with other States of the same age, or indeed with much older States, Illinois has no reason to be ashamed of her efforts in the direction of agricultural improvement. As early as 1819, when a State hardly one year old, she had taken her first step in that direction. Faux, in his "Memorable Days in America," writing from the

Wabash country, under date of November 24, 1819, said of Morris Birbeck, "He, only a few days since, returned from a tour through Illinois, by way of Kascasky, where he was chosen President of the Agricultural Society of Illinois, one grand object of which will be to rid the State of stagnant waters." The Edwardsville *Spectator*, of May 16, 1820, contains a letter from Curtiss Blakeman to Henry S. Dodge, Secretary of the Agricultural Society of the State of Illinois, in relation to a large crop of corn grown by Mr. Blakeman, in Madison county. The same paper, of the date of February 26, 1822, contains an essay by Dr. Woodworth, "read before the Agricultural Society of the State of Illinois, on the 10th day of December last," (1821.) The officers of this Society, elected December 8, 1823, were Edward Coles, President; Shadrach Bond, Vice President; Abner Field, 2d Vice President; Wm. M. Brown, Secretary; Elijah C. Berry, Treasurer; and a Committee of Correspondence, consisting of Wm. S. Hamilton, Ezra Baker, A. W. Edwards, George Churchill, and David Blackwell. One of these gentlemen, writing a number of years afterward, says, "The members becoming tired of keeping up their organization, turned over their surplus funds to the Sunday School agent (Rev. J. M. Peck), and disbanded." The above scattered facts, furnished us by Hon. W. C. Flagg, of Madison county, go to show an early effort of at least four years duration, in the direction of an organized attempt at the improvement of Illinois agriculture.

The members of the State Board of Agriculture would not feel that they had discharged their entire duty if they failed to reiterate, and if possible give additional emphasis, to the recommendation of the Executive Committee of the late State Agricultural Society that the Legislature of the State of Illinois provide, at an early day, for the collection and publication of information bearing upon the agricultural and industrial resources of the State. Much that is valuable for history, and as lending aid toward the improvement of the present, is yearly lost from want of information to be obtained only in this manner, and the longer the matter is delayed the greater will be the labor required to make up for past deficiencies.

Submitted on behalf of the State Board of Agriculture.

With high regard, sir,

I am, very truly, yours,

A. M. GARLAND,

Secretary.

APPENDIX TO PROCEEDINGS.

The following proceedings properly belong to the report for the year 1872, but are given here to complete the record of the State Agricultural Society in this volume, and the proceedings of the Executive Committee by which they accepted the act creating them a State Board of Agriculture:

STATE AGRICULTURAL ROOMS,
SPRINGFIELD, *Jan.* 2, 1872.

The Executive Committee met in regular annual session. Present—President Brown, Ex-President Kile, Vice-Presidents Herrington, Dunlap, Fisher, Goltra, Gillham and Parker, and Secretary Garland.

The minutes of meeting held at Du Quoin were read and approved.

The committee appointed to look after the interests of the State Agricultural Society, in the suit of General J. W. Singleton, reported that "no declaration" was filed by said Singleton at last term of Adams County Circuit Court. Committee was continued.

The following communication from the honorable Commissioner of Agriculture, was read, and laid over for further consideration by Executive Committee:

DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C., *Dec.* 20, 1871.

A. M. GARLAND, *Springfield, Ill.*:

SIR—By the act of the 2d July, 1862, Congress donated to the several States a portion of public lands, in the ratio of their population, for the purpose of establishing Agricultural Colleges, thereby evincing a purpose to promote that great interest through the instrumentality of the respective States. A correspondence and consultation between friends of these interests, have led to the conclusion that a convention of delegates representing them, for the purpose of conferring upon subjects of mutual interest, would promote the good of all. It has been suggested that I take the responsibility of initiating such a meeting. I therefore propose that each Agricultural College, State Agricultural Society, State Horticultural Society, and State Board of Agriculture, depute two delegates, to meet in convention, at the City of Washington, on Thursday, the 15th of February next, to take such action regarding the interests of Agriculture as they shall deem expedient.

I am, very respectfully,
FREDERICK WATTS, *Commissioner.*

The President called attention to the necessity for re-organization as a State Board of Agriculture, under the law creating a Department of Agriculture in this State.

On motion of Mr. Gillham, a committee of five was appointed to prepare a code of by-laws for use of State Board of Agriculture, and for formation of County Agricultural Boards.

Messrs. Gillham, Herrington, Fisher, Kile and Garland, were appointed a committee to prepare said by-laws.

On motion of Dr. Kile, President Brown was added to the committee.

On motion of Mr. Goltra, adjourned to 9 o'clock P. M., to-morrow.

JANUARY 3, 1872—9 A M.

The Committee met. Present—President Brown, Ex President Kile, Vice-Presidents Edmunds, Reynolds, Dolton, Herrington, Dunlap, Cobb, Fisher, Goltra, Gillham, Parker, and Secretary Garland.

On motion of Mr. Gillham, the location of the Fair for 1872 was made the special order for Thursday morning, January 4, at 9 o'clock.

On motion of Dr. Kile, the correspondence with Du Quoin District Fair Association in reference to release from obligation to furnish accommodation for State Fair for 1872, was taken up.

On motion of Mr. Gillham, the report of Secretary as to the arrangement arrived at with the Du Quoin authorities, was received, and adopted as the action of this Board.

Mr. Gillham asked to have read the report of the Legislative Committee on Public Buildings and Grounds; and called up question of quarters for the accommodation of the Department of Agriculture in the new State House.

On motion of Mr. Cobb, the President, Secretary, and Mr. Gillham, were appointed a committee to select and secure suitable rooms in the new State House.

On motion of Mr. Gillham, Mr. Cobb was added to said committee.

On motion of Mr. Goltra, adjourned to 2 o'clock P. M., this day.

AFTERNOON SESSION.

The Committee met, pursuant to adjournment—present as in the forenoon.

Mr. Gillham, from Special Committee on By-Laws, reported in writing.

On motion of Mr. Edmunds, the report was received, and committee discharged.

On further motion of Mr. Edmunds, went into Committee of the Whole for consideration of code of by-laws, as reported from the Special Committee—Mr. Dolton in the chair.

After some time spent in consideration, during which debate was participated in by Messrs. Edmunds, Herrington, Rosenstiel, Gillham, Brown, Reynolds, Fisher and Cobb,

On motion of Mr. Gillham, the committee rose, reported a code of by-laws back to the Board, and recommended their adoption, and asked to be discharged from further consideration of the subject.

Mr. Dolton moved the adoption of the by-laws as reported from the Committee of the Whole, excepting the two last sections.

On motion of Mr. Gillham, the motion of Mr. Dolton was so amended as to allow the several sections to be taken up *seriatim*, for consideration; following which course the several sections were read separately, and adopted.

On motion of Mr. Edmunds, Mr. Reynolds was appointed a committee to draft an additional section, specifying a form for report of County Agricultural Boards.

For premiums awarded at this meeting, see page 61, of this volume.

A. M. GARLAND,
Secretary.

POPULATION OF THE STATE OF ILLINOIS,

ITS INCREASE AND DENSITY.

Counties.	Area in sections.	Population 1870	Population 1865	Increase......	Per cent. of increase	Population to the mile....
Adams	828	56,362	51,185	5,177	10.	68
Alexander	226	10,564	12,206	1,642	.....	46
Bond	378	13,152	11,471	1,681	13.7	34
Boone	288	12,942	11,680	1,262	10.8	45
Brown	296	12,205	12,698	493	.... .	41
Bureau	867	32,415	31,568	847	02 6	37
Calhoun	255	6,562	5,971	591	09.8	25
Carroll	446	16,705	14,526	2,179	15.	37
Cass	379	11,580	11,876	296	.....	30
Champaign	1,008	32,737	21,124	11,613	54.9	32
Christian	709	20,362	17,239	3,123	18.1	28
Clark	509	18,719	17,032	1,687	09.	36
Clay	468	15,875	13,332	2,543	19.8	34
Clinton	489	16,285	13,795	2,490	18.	33
Coles	523	25,235	22,951	2,284	09.9	48
Cook	982	349,966	217,309	132,657	61.	356
Crawford	435	13,889	13,116	773	05.8	32
Cumberland	350	12,223	10,667	1,556	14.5	35
DeKalb	648	23,265	21,294	1,971	09.2	36
DeWitt	405	14,768	12,815	1,953	15.2	36
Douglas	408	13,484	11,652	1,832	15.9	33
DuPage	338	16,685	15,180	1,505	09.9	49
Edgar	631	21,450	20,946	504	02.4	34
Edwards	233	7,565	6,180	1,385	22.4	32
Effingham	486	15,653	12,611	3,042	24.1	32
Fayette	720	19,638	15,697	3,941	25.9	27
Ford	480	9,103	3,643	5,460	149.8	19
Franklin	422	12,652	11,476	1,176	10.2	30
Fulton	878	38,291	36,900	1,391	03.7	43
Gallatin	326	11,134	8,055	3,079	38 2	34
Greene	546	20,277	17,630	2,647	15 0	37
Grundy	431	14,938	12,745	2,193	17.2	34
Hamilton	432	13,014	9,509	3,505	36 8	30
Hancock	773	35,935	33,596	2,339	06 9	46
Hardin	176	5,113	3,863	1,250	32.3	29
Henderson	386	12,582	11,289	1,293	11.4	32
Henry	828	35,506	26,338	9,168	34 4	42
Iroquois	1,132	25,782	18,076	7,706	40.0	22
Jackson	582	19,634	14,679	4,955	33.7	33
Jasper	506	11,234	10,120	1,114	11.0	22
Jefferson	574	17,864	15,271	2,593	16.9	31
Jersey	365	15,054	13,566	1,488	10.9	41
Jo Daviess	609	27,820	26,437	1,383	05 1	45
Johnson	336	11,248	11,467	219	.....	33
Kane	540	39,091	32,570	6,521	20.0	72
Kankakee	698	24,352	18,696	5,656	30.2	35
Kendall	324	12,399	12,689	290	.....	35
Knox	720	39,522	34,401	5,121	14.8	54

Statement—Continued.

Counties.	Area in sections.	Population 1870	Population 1865	Increase.	Per cent. of increase.	Population to the mile. ...
Lake	478	21,014	18,660	2,354	12.1	44
LaSalle	1,152	60,792	56,645	4,047	00.6	52
Lawrence	365	12,533	10,439	2,094	19.1	34
Lee	736	27,171	22,680	4,541	20 0	36
Livingston	1,026	31,471	17,500	13,971	79.8	30
Logan	618	23,053	18,501	4,552	24.6	37
Macon	577	26,481	21,691	4,790	22.0	46
Macoupin	864	32,726	32,305	421	01 3	37
Madison	748	44,131	42,042	2,089	04.9	59
Marion	576	20,622	18,960	1,662	08.7	35
Marshall	387	16,956	16,652	304	01.8	43
Mason	560	16,184	10,931	5,253	44 2	29
Massac	242	9,581	8,261	1,320	15.9	39
McDonough	576	26,509	25,659	850	03 3	46
McHenry	624	23,762	23,077	685	02 9	38
McLean	1,154	53,988	39,772	14,216	36.2	46
Menard	314	11,735	10,447	1,288	12.1	37
Mercer	548	18,769	17,318	1,451	08.8	34
Monroe	381	12,982	12,832	150	01.1	34
Montgomery	702	25,314	19,812	5,502	20.0	36
Morgan	564	28,463	26,202	2,261	08 6	50
Moultrie	331	10,385	8,324	2,061	24 7	31
Ogle	758	27,492	25,254	2,238	08.0	36
Peoria	618	47,540	41,979	5,561	13 2	76
Perry	444	13,723	11,477	2,246	19.5	31
Piatt	442	10,953	8,138	2,815	34 3	24
Pike	795	30,768	30,299	469	01.4	38
Pope	362	11,437	11,353	84	00.7	31
Pulaski	187	8,752	7,447	1,305	18.8	41
Putnam	168	6,280	6,311	31	.....	37
Randolph	577	20,859	18,688	2,171	11.6	36
Richland	361	12,803	11,488	1,315	11.4	32
Rock Island	436	29,783	35,202	5,419	....	68
Saline	379	12,714	11,605	1,109	09.5	33
Sangamon	868	46,352	48,273	1,921	....	53
Schuyler	426	17,419	16,090	1,329	08.2	41
Scott	251	10,530	9,423	1,107	11 7	41
Shelby	776	25,476	19,278	6,198	32.1	32
Stark	288	10,751	9,885	866	00.8	37
St. Clair	665	51,068	43,741	7,327	16 7	77
Stephenson	567	30,608	29,231	1,377	04.7	54
Tazewell	626	27,903	25,200	2,703	10 7	44
Union	398	16,518	15,880	638	04.0	41
Vermilion	1,008	30,388	25,528	4,860	19 4	30
Wabash	218	8,841	7,179	1,662	23.1	40
Warren	540	23,174	20,966	2,208	10.5	42
Washington	556	17,599	16,193	1,406	08.6	31
Wayne	720	19,758	14,455	5,303	36 6	27
White	500	16,846	14,047	2,799	19.9	33
Whiteside	697	27,503	24,125	3,378	14.0	39
Will	852	43,013	36,986	6,027	16 3	50
Williamson	432	17,329	14,168	3,166	22.3	40
Winnebago	540	29,301	25,541	3,760	10.7	54
Woodford	527	18,956	18,022	934	05.1	36
Totals	55,872	,539,891	2,141,514	398,377		

PROCEEDINGS OF EXECUTIVE COMMITTEE.

ROOMS ILLINOIS STATE AGRICULTURAL SOCIETY,
SPRINGFIELD, *January* 10, 1871.

Officers of the Illinois State Agricultural Society were called to order by Dr. Wm. Kile, retiring President.

Upon calling the roll, the following officers elect answered to their names:

President	DAVID A. BROWN	*Bates.*
Vice-President-at large	JOHN P. REYNOLDS	*Chicago.*
" " 1st District	A. H. DOLTON	*Dolton Station.*
" " 2d "	JAMES HERRINGTON	*Geneva.*
" " 3d "	C. H. ROSENSTIEL	*Freeport.*
" " 4th "	GEORGE EDMUNDS, JR.	*Sonora.*
" " 5th "	A. J. DUNLAP	*Galesburg.*
" " 7th "	JAMES R. SCOTT	*Champaign.*
" " 8th "	S. D. FISHER	*Atlanta.*
" " 9th "	D W. VITTUM, JR.	*Canton.*
" " 10th "	M. C. GOLTRA	*Jacksonville.*
" " 11th "	C. W. WEBSTER	*Benton.*
" " 13th "	D. T. PARKER	*Cairo.*
Secretary	A. M. GARLAND	*Springfield.*

Ex-President Kile introduced Hon. David A. Brown, President elect, who thereupon proceeded to address the Committee, as follows:

Gentlemen of the Illinois State Agricultural Society:

My desire to unite with you in the very commencement of my duties as presiding officer of this Society, and to have your hearty co-operation in all efforts calculated to advance its interests, makes it plainly my duty, at this time, to acquaint you with some of the principles and motives which shall influence my actions, and indicate the general course of administration, during the time fixed by the constitution of this Society for my continuance in office.

Actuated, as I trust we all are, by a sense of the present and ever-increasing obligations we are under to the Great Giver of all Good, it seems most appropriate, on an occasion of this kind, to evince, in this public manner, a recognition of these obligations, by enumerating some, at least, of the countless benefits with which the people of this State have been blessed in the past year. In directing your attention, gentlemen, to this subject, so full of interest, and so well calculated to awaken anew our gratitude to a kind Providence, I can detain you now only to mention that the year 1870, as compared with any one year in the history of our State, stands without a parallel in the abundance of almost its entire industrial products, and more especially in the agricultural staples annually produced in this latitude. From a soil of unsurpassed fertility, well adapted to such a variety that is valuable in the vegetable kingdom, the most generous returns have been made. It will be conceded, I have no doubt, that a greater breadth of corn was planted, and that the general average, in quality and yield, exceeds that of any former year. The same is true of wheat. While the hay crop has fallen short in quantity, the loss is more than compensated by the increased nutritive properties over the year 1869. The mode of cultivation by which these extraordinary crops have been produced, was, I apprehend, very much the same as that ordinarily resorted to by our farmers of late years. But it should be remembered that within the last fifteen or twenty years, a wonderful progress has been made in the science of agriculture, and that without this knowledge, and the appliances of newly invented machinery, added to the favorableness of the season, our storehouses would not now perhaps be full to overflowing as they are with the products of the land. The benefits which have resulted from the organization of the Illinois State Agricultural Society have been largely developed in the past years of its existence. The noticeable improvement made from year to year in the management of the soil; the astounding increase in the quantity and variety of the fruits—(particularly the small fruits); the marked improvement in the breeds of the various domestic animals of the State; the introduction of new and improved machinery—but I might dwell upon this subject almost indefinitely—all have been brought about, in a great degree, by influences at work in this and kindred associations.

There is probably no feature connected with the Society, in whose operations the people at large feel a deeper interest, than those of our annual exhibitions. Let us endeavor to make these occasions more useful and attractive, by holding evening meetings during the Fair, for the discussion of practical subjects, and by lectures, suited to the wants of the people, from gentlemen of scientific attainments. The State Society, gentlemen, has confided the management of these institutions to our peculiar care; and I feel bound by a sense of the trust reposed in me to recommend for your consideration the adoption of such rules for the regulation of our exhibitions as will give to them that high moral character their importance demands. A privilege sometimes granted by the Executive Committee to a class of professional showmen, in admitting them, with their side-shows, to a place on the Fair Grounds, must appear to you, gentlemen, when seriously considered, so unsuited to the dignity of a great Industrial Exhibition, and so fraught with evil in its consequences, as to make it needless for me to say more, I trust, than briefly to allude to the fact, leaving it with you to apply the necessary remedy. Some amendments to the constitution have been thought advisable; but as measures were taken at the last biennial meeting, held at Decatur, to carry into effect this object, by the appointment of a committee who have the subject under advisement, any remarks from me, touching this question, seem uncalled for.

The unusual interest manifested of late by the people in many parts of the State in favor of the permanent location of the State Fair, and the wide-spread misapprehension that seems to prevail with them, in the belief that this Society has the power to make a permanent location, makes it proper for me to state that no power is given by the constitution to locate the Fair for longer time than two years—that being the length of time for which the officers of the Society are elected. There is no clause in the constitution, however, that would prevent its being located every two years at the same point, if by chance it should be the will of every successive administration to place it there. It is evident, then, that the State Fair cannot be permanently located (except in the improbable way mentioned), until this Society derives its right to do so by a power not now conferred by its constitution.

After having observed closely the workings of this Association from its organization, and for the last three years having been one of its Vice-Presidents, I think it due to my predecessors to bear testimony to the efficiency and integrity with which they have conducted its affairs up to the present time. In this connection I should be doing injustice to my own feelings, and, I doubt not, to the opinions entertained by the members of this Board, did I fail to express the belief that much of the success of this Society is owing to the labors so ably and faithfully performed by John P. Reynolds, its retiring Secretary.

It is gratifying, gentlemen, to observe the progress that is being made in the line of our pursuits throughout the State, and to witness the increasing interest that is everywhere made apparent by agencies at work to give importance to the industries of the country. Among the most prominent, serving to promote these objects, I might mention the Press, our kindred Societies, the Agricultural Colleges of the country, and the Department of Agriculture, at Washington. To these let us send greeting, with invitations to their representatives to meet us in fraternal counsel at our annual exhibitions: there to receive from us our most cordial welcome, and partake of our hospitalities.

Permit me, gentlemen, to tender through you to the County Agricultural Societies in this State, and to their delegates, my grateful acknowledgments for the honor they have conferred upon me—having so little claim to their suffrages—in electing me to the high office upon the duties of which I am now to enter. In all my efforts to discharge the various duties of this important trust, I shall continually feel the want of those qualifications for the place that belong, in such an eminent degree, to many of the members of this Society. Looking to you, gentlemen, for that assistance you are so competent to render, I am now ready to enter upon the business for which we are assembled.

On motion of Dr. Kile,

Ordered, That the remarks of the President be spread upon the journal.

Ex-President Kile introduced Mr. Jackson, Senator from Lawrence county, who presented the draft of a bill on the subject of Drainage, to be submitted to the General Assembly, and asked for it the approval of the Board.

Referred to Committee consisting of Messrs. Kile, Edmunds, and Herrington.

On motion of Mr. Rosenstiel,

Resolved, That leave of absence be granted to D. B. Gillham, by this Board, to attend the sessions of the lower house of the General Assembly, of which he is a member.

Ordered, That representatives from localities desiring the State Fair, for 1871, be heard at 2 o'clock.

On motion of Mr. Webster,

A Committee of three was appointed to report upon the address of President Brown.

Messrs. Webster, Edmunds, and Goltra, were appointed said Committee.

On motion, requirements in case of last Fair were read, and, after slight modification, were adopted.

Whereupon, the Board adjourned till 2 o'clock P. M.

2 o'clock P. M.

Board met, pursuant to adjournment.

Present: as in the forenoon.

On motion of Mr. Dolton,

Ordered, That parties representing localities desiring the next Fair, be now heard.

The Board then listened to remarks from Mr. Russell of Centralia, Mr. Neeley of Du Quoin, Dr. Paul of Ottawa, and Mr. Priest of Decatur, setting forth the advantages of their respective localities, and asking the favorable consideration of the Board.

Mr. Edmunds offered the following:

Resolved, That a committee of three, consisting of Messrs. Kile, Reynolds, and Goltra, be appointed to examine the localities and grounds offered for the next Illinois State Fair, and that they report to a meeting of this Board to be held on the .... day of ......, 1871, with such recommendations as they shall deem proper on the subject, and that at that time the Board proceed to locate the State Fair.

On motion of Dr. Kile,

Laid on the table until to-morrow at 7 o'clock P. M.

On motion of Mr. Dunlap,

A Committee of three, Messrs. Dunlap, Fisher, and Webster, was appointed to confer with delegations representing cities desiring the Fair.

On motion of Mr. Reynolds,

Resolved, That the Illinois State Fairs, for 1871 and 1872, be held commencing on the last Monday in September of each year, and continue one week.

The President laid before the Board a communication from A. O. Battson, M. D., in relation to Milk Sickness.

Ex-President Kile moved that the communication be laid on the table. Lost.

On motion of Mr. Herrington,

The thanks of the Board were voted to Dr. Battson for his paper.

On motion of Mr. Goltra,

Adjourned till 9 o'clock to-morrow morning.

JANUARY 11, 1871—9 *o'clock A. M.*

Board met, pursuant to adjournment.

President Brown in the chair.

Present: Messrs. Kile, Reynolds, Dolton, Herrington, Rosenstiel, Edmunds, Dunlap, Scott, Fisher, Vittum, Goltra, Parker, and Garland.

Minutes of yesterday's meetings were read and approved.

Mr. Rosenstiel, of Auditing Committee for last Fair, handed in the bill of Macon County Agricultural Society for $54, and asked for action of the Board upon the same.

On motion of Dr. Kile,

Laid over till 2 o'clock P. M.

Ex-President Kile, from Committee on Drainage Law, reported verbally that the bill submitted was incomplete, and asked further time for considering it. Allowed.

Mr. Dunlap, from Committee to confer with delegations in reference to location of next State Fair, reported that the Committee had discharged that duty, and found a desire on the part of said delegations that the decision of this Board on the matter of location be postponed for the time being.

Mr. Reynolds introduced Mr. Moore, of Fulton county, who presented some suggestions in reference to the Swine Breeding interest.

Mr. Dolton offered the following:

Resolved, That the Senate and House of Representatives, of Illinois, be and they are hereby requested to pass a law prohibiting stock animals of all kinds from running at large in this State.

Resolved, That the Secretary of this Board is hereby instructed to furnish a copy of above resolution to each house of the General Assembly, and to the Committee on Agriculture in each of said houses.

Mr. Scott moved to amend so as to recommend the adoption of a general law applicable to all counties, though excepting from its operations such counties as may vote to reject, by a majority vote, at any general election.

Amendment adopted: Yeas 8, nays 7.

Those voting in the affirmative are, Messrs. Kile, Reynolds, Scott, Fisher, Goltra, Webster, Garland, and Brown—8.

Those voting in the negative are, Messrs. Dolton, Herrington, Rosenstiel, Edmunds, Dunlap, Vittum, and Parker—7.

Mr. Herrington moved that the whole subject be laid on the table. Lost: Yeas 4, nays 11.

Those voting in the affirmative are, Messrs. Herrington, Goltra, Webster, and Parker—4.

Those voting in the negative are, Messrs. Kile, Reynolds, Dolton, Rosenstiel, Edmunds, Dunlap, Scott, Fisher, Vittum, Garland, and Brown—11.

Ex-President Kile offered the following:

Resolved, That the statute in relation to lawful fences, in case of trespass and damage by stock, should be so amended as to strike out the words "good and sufficient fence," and that the Secretary be requested to hand a copy of this resolution to the chairman of the Committee on Agriculture in each house of the General Assembly now in session.

Resolution lost.

The resolution of Mr. Dolton, as amended, was adopted.

Adjourned till 2 o'clock P. M.

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2 o'clock P. M.

Board met, pursuant to adjournment.

Minutes of forenoon session were read and approved.

Mr. Webster, from special Committee on President Brown's inaugural address, presented the following report, which was received and adopted:

To the Executive Committee of the Illinois State Agricultural Society:

Your Committee, to whom was referred the inaugural address of President Brown, beg leave to report that they have had the same under consideration, and are happy to be able to state their general concurrence with the views so well and forcibly expressed. They find much to commend, and nothing to condemn. We commend the reference to the rapid development of the industrial resources of the State, to the agency of this Society in bringing about such results, and his recognition of the valuable services of his predecessors; and we most heartily agree with him in the statement "that much of the success of this Society is owing to the labors so ably and faithfully performed by Hon. John P. Reynolds, the Society's retiring Secretary," the value of whose services, continued as they have been through so many years, will not be questioned by any one at all familiar with the history of the Society, or with the industrial growth of the State.

In regard to his special recommendations, there is nothing which our judgment does not approve. The line of policy marked out to maintain the elevated and useful character of our annual exhibitions, we think eminently proper. Bearing in mind the nature of this organization, the objects it is expected to accomplish, and the means to be employed, it is difficult to find a place on our Fair Grounds for the professional showman. If such exhibitions as he makes are not even immoral, they are at least entirely foreign to the purposes of the Society, and are in no possible way calculated to impart useful information, or improve the tastes of the great mass of the people who attend our Fairs. But they are frequently accompanied with contrivances for gambling, and conveniences for the practice of other vices, which we think should exclude them, in all cases, from the grounds.

The President's remarks in relation to the permanent location of the Fair at a single point, seem to place that question on its true grounds. In the absence of any authority in the Executive Board to make such location, it would seem idle to discuss it seriously.

In conclusion, we desire to express, again, our appreciation of both the matter and manner of the President's address.

All of which is respectfully submitted.

C. W. WEBSTER, *Chairman*,
M. C. GOLTRA,
GEORGE EDMUNDS, JR.,
Committee.

The special order for 2 o'clock—the bill of the Macon County Agricultural Society—was taken up, and laid over till the February meeting of the Board.

On motion of Dr. Kile,

Resolved, That a Committee, consisting of President Brown and Messrs. Gillham, and Garland, be appointed to select and contract for a suitable room for the use of this Board for the next two years.

On motion of Dr. Kile,

Resolved, That a Committee of three be appointed to take into consideration the amount per annum of salary that shall be paid the Secretary for his services.

Messrs. Kile, Fisher, and Dunlap, were appointed such Committee.

On motion of Mr. Fisher,

Resolved, That a Committee of three be appointed to take into consideration the amount of money in the hands of the Treasurer, and what amount of interest, if any, should be paid the Society for the use of said funds.

Messrs. Fisher, Scott, and Goltra, were appointed such Committee.

On motion of Mr. Dolton,

The vote making the location of the next State Fair the special order for 7 o'clock this evening, was rescinded; whereupon,

Mr. Edmunds, by consent, withdrew the resolution offered by him yesterday.

On motion of Mr. Webster,

Resolved, That the Secretary be authorized to advertise the requirements to be fulfilled by localities competing for the location of the next Fair, and that this Board convene on the last Tuesday in February, to consider and pass upon proposals from such localities.

The President announced the following appointments of Superintendents of Departments:

D. B. GILLHAM, General Superintendent of Grounds.
J. R. SCOTT, Marshal of the Ring.
S. D. FISHER, Superintendent of Forage.
Superintendent Class A—Cattle—JOHN P. REYNOLDS.
" " B—Horses—EMORY COBB.
" " C and E—Sheep and Poultry—JAMES HERRINGTON.
" " D—Swine—D. W. VITTUM, JR.
" " F—Mechanics, Sec. 1—M. C. GOLTRA.
" " " " 2—GEO. EDMUNDS, JR.
" " G—Farm Products—D. T. PARKER.
" " H, I and L—Horticulture, Fine Arts, and Nat. History—A. H. DOLTON.
" " K—Textile Fabrics—C. W. WEBSTER.

Auditing Committee—In charge of Gates, Tickets and Permits—Messrs. C. H. ROSENSTIEL and A. J. DUNLAP.

Reception Committee—Messrs. C. W. WEBSTER and WM. KILE.

On motion of Mr. Dolton,

The sum of $15 was voted each member of the Board, for Agricultural papers.

Mr. Webster announced the death of Hon. D. D. Shumway, late a member of this Board, and moved that a Committee of three be appointed to draft resolutions expressive of the sense of the Board, in view of the loss sustained by the Agricultural interests of this State.

Motion adopted, and Messrs. Reynolds, Gillham and Rosenstiel were appointed such Committee.

Mr. Webster introduced Mr. Russell, who tendered to the Board the hospitality of the city of Centralia, and requested the acceptance of the same.

On motion of Mr. Gillham,

The consideration of the subject of Drainage was laid over till the February meeting of the Board.

Mr. Herrington introduced Mr. Fisk, who extended an invitation to the Board to visit the city of Ottawa.

On motion of Mr. Dunlap,

Resolved, That the Secretary be instructed to apply to the several railroads of the State for free passes for such members as may have to pass over their lines to reach the meetings of this Board.

On motion of Mr. Herrington,

The Committee on money in the hands of the Treasurer were allowed until the next meeting of the Board in which to report.

Adjourned till 7 o'clock P. M.

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7 o'clock P. M.

Board met, pursuant to adjournment.

Mr. Webster introduced Judge Greene, of Cairo, who addressed the Board, setting forth reasons why the next Fair should be held in Southern Illinois.

Dr. Kile, from Committee to consider compensation of Secretary, reported as follows:

Your Committee would respectfully report that they have had under consideration the per annum allowance, or salary, of the Secretary, and would recommend that his salary be fixed at $2,000.

All of which is respectfully submitted.

Report laid over till February meeting of the Board.

Mr. Fisher, from Committee appointed to consider the investing of moneys in the hands of the Treasurer, reported as follows:

We, your Committee appointed to take into consideration what amount of money there may be in the Treasury that can be loaned, how long, at what per cent., beg leave to report that we have attended to that duty and find $5,000 that might be loaned for at least eight months, and recommend that the same be left in the hands of the Treasurer, provided he will pay interest at the rate of six (6) per cent. per annum on the said amount for the time named.

Respectfully submitted.

S. D. FISHER, *Chairman*,
J. R. SCOTT,
M. C. GOLTRA,
Committee.

Mr. Dunlap introduced Senator Whiting, of Bureau county, who addressed the Board on the subject of a general Dog law.

Mr. Remsberg followed in the same direction.

On motion of Mr. Herrington,

Resolved, That this Board respectfully asks the General Assembly of Illinois to pass a law to more effectually protect life and property from destruction by the depredation of Dogs.

On motion of Dr. Kile,

The vote postponing the subject of Drainage to the February meeting, was reconsidered.

Dr. Kile asked to have read the draft of a bill for a Drainage law, prepared by Vice-President Edmunds; after which,

Dr. Kile moved that a copy of the bill read be prepared, and that the President be a Committee to place it in the hands of the Chairman of the Committee on Drainage in each branch of the General Assembly.

The yeas and nays being called for, were taken, viz:

Those voting in the affirmative are, Messrs. Kile, Edmunds, Vittum, Goltra, Garland, and Brown—6.

Those voting in the negative are, Messrs. Dolton, Reynolds, Scott, Herrington, Rosenstiel, Dunlap, Fisher, Webster, and Gillham—9.

So the motion was lost.

Mr. Gillham moved that the whole subject be laid over until the February meeting of the Board.

Mr. Scott moved to amend by appointing Messrs. Kile, Edmunds, and Gillham, a Committee to prepare abill and submit the same to the Drainage Committees of the Legislature.

The yeas and nays being called for, were taken, viz:

Those voting in the affirmative are, Messrs. Kile, Dolton, Herrington, Rosenstiel, Dunlap, Scott, Fisher, Vittum, Gillham, and Garland—10.

Those voting in the negative are, Messrs. Edmunds and Brown—2.

So the motion of Mr. Scott prevailed.

Mr. Gillham, from special Committee, submitted the following report, which was adopted:

The Committee to prepare resolutions touching the decease of Hon. D. D. Shumway, respectfully report, viz:

WHEREAS, it has pleased the Ruler of All, in His providence, to take from among us our late honored fellow member of this Board, D. D. Shumway, Esq., of the Tenth District; therefore,

Resolved, That in the decease of Mr. Shumway the Agricultural interests of this State have lost a faithful and earnest friend, and society a gentleman of the highest character, whom, as an associate member of this Board, we learned to respect and love.

Resolved, That we hereby tender to the family and immediate circle of friends and relatives of the deceased, our heart-felt sympathy and condolence in their deep affliction.

Resolved, That the Secretary be instructed to forward a copy of these resolutions to the family of the deceased.

JOHN P. REYNOLDS,
D. B. GILLHAM,
C. H. ROSENSTIEL,
Committee.

On motion of Mr. Dolton,

Board adjourned to last Tuesday in February, 1871.

STATE AGRICULTURAL ROOMS,
SPRINGFIELD, *February* 28, 1871.

Board met, pursuant to adjournment.

President Brown in the chair.

Upon calling the roll, the following members answered to their names:

Messrs. Kile, Reynolds, Herrington, Rosenstiel, Edmunds, Dunlap, Cobb, Scott, Fisher, Vittum, Goltra, Parker, and Garland.

The special Committee on Room presented the following report, which was received and adopted:

To the Executive Committee Illinois State Agricultural Society:

Your special Committee, charged with the duty of securing new quarters for the occupancy of the State Agricultural Society, respectfully report that they have discharged that duty. That arrangements were made with General I. B. Curran by which the Society was released from obligation to occupy the old rooms by the payment of one hundred and fifty dollars, which amount is also to pay for all rent accrued in the year 1871. That they have rented from the Springfield Board of Trade the room in which you are now sitting, at an annual rental of two hundred and fifty dollars, which amount is to cover the privilege of using the matting, eighteen chairs, two large tables, the stove and gas fixtures, then and now in the room. Rent payable quarterly. Your Committee have also secured from Mr. J. C. Conkling, the proprietor of the building, the privilege of holding the room after the expiration of the lease from the Board of Trade, viz: August 1, 1872, during the term of five years from the first of January, 1871, without increase of rent.

Your Committee, in the discharge of their duties, have incurred expenses as follows:

Labor and drayage	$9 50
Painting, varnishing and glazing	24 60
Carpenter work, on book cases, railing and platform	79 70
Whitening walls and scrubbing	9 00
Carpeting platform	8 00
Moving and hanging sign	1 50
Covering tables	6 76
President's chair	10 00
Locks and pictures	3 00
Total	$152 06

All of which is respectfully submitted.

D. A. BROWN,
D. B. GILLHAM,
A. M. GARLAND,
Committee.

On motion of Mr. Goltra,

Ordered, That proposals for location of next State Fair be received up to 3 o'clock P. M. of this day.

Mr. Edmunds read and explained the provisions of the bill for "An act to create a Department of Agriculture in the State of Illinois," now pending in the General Assembly.

On motion of Mr. Herrington,

Board went into Committee of the Whole on the bill, Mr. Reynolds in the chair.

After debate, participated in by Messrs. Brown, Kile, Cobb, Herrington, Fisher, and Reynolds,

On motion of Mr. Goltra,

Committee rose, reported progress, and asked leave to sit again on Wednesday (to-morrow) at 7 o'clock P. M.

Mr. Rosenstiel, Chairman of the Committee to select and purchase a memorial, to be presented to Dr. Wm. Kile, Ex-President of the Society, reported that duty discharged, and presented a bill for the same, amounting to $149.

On motion of Mr. Cobb,

Report was received and adopted, and the bill ordered paid.

The President laid before the Board a letter from Gen. James W. Singleton in reference to an unsettled account between the State Agricultural Society and the Adams County Agricultural, Horticultural and Mechanical Association; pending the consideration of which,

Mr. Cobb offered the following:

WHEREAS a communication has been addressed to the President of this Board, by J. W. Singleton, in regard to an unsettled claim of the Adams County Agricultural Society, against the Illinois State Agricultural Society; therefore,

Resolved, That a Committee of five, composed of President Brown, Vice-Presidents Reynolds, Goltra, Rosenstiel, and Edmunds, be authorized to audit and settle such claims, and report their action to this Board.

On motion of Mr. Goltra,

Resolution was amended so as to authorize the Committee to confer and report to the Board for its action.

Resolution and amendment lost.

On motion of Mr. Reynolds,

The subject was temporarily laid on the table.

On motion of Mr. Goltra,

Adjourned till 2 o'clock P. M.

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2 *o'clock P. M.*

Board met, pursuant to adjournment.

The business for the hour being the consideration of propositions for the location of the State Fair, communications were read, as follows:

FROM OTTAWA.

The LaSalle County Agricultural Society and citizens of Ottawa, through their Committee, respectfully ask of your honorable body that you locate your Agricultural Fair, for the years 1871 and 1872, at Ottawa; and that they will comply with the requirements hereto attached—(Society's printed requirements attached). Also, that the Chicago, Rock Island and Pacific, Rockford, Rock Island and St. Louis, and Chicago, Burlington and Quincy railroads have authorized us to say that they will do all that is usually done by railroads on whose lines Fairs have been located, by carrying freight for the Fair free, and passengers at three-fifths usual rates. Also, express and telegraph offices will be located on the grounds.

Signed,
DAVID STRAWN,
F. L. FISKE,
Committee.

FROM DECATUR.

To the Executive Committee Illinois State Agricultural Society;

We, the undersigned, representing the Board of Supervisors of Macon county, the City Council of Decatur, and the Macon County Agricultural Society, beg leave to make the following propositions for the location of the State Fair for either the years 1871 or 1872, namely: To tender the Grounds and fixtures of the Macon County Agricultural Society, and make such additional improvements as the State Society requires by their printed specifications, and to comply in letter and spirit with such requirements in every particular. Second, if said State Society will locate for the years 1871 and 1872 on said Grounds, that they will add the beautiful twenty-acre lot on the east side of their Grounds, inclosing the same in the manner described. We beg leave to call your attention to the central position, railroad facilities, etc., of Decatur. Financially, your receipts at former Fairs held there tell the tale better than any language we can employ. With continuous rain at last Fair, your treasury was increased some two thousand dollars, which, with the proceeds of the booths that the County Society received, would have swelled your receipts to near five thousand dollars more than your expenditures.

J. BENSON MYERS,
Chairman Board of Supervisors.
Signed, F. PRIEST,
Mayor of Decatur.
J. H. PICKRELL,
Prest. Macon County Ag. So.

FROM DU QUOIN.

SECRETARY'S OFFICE,
DU QUOIN, *February* 22, 1871.

Executive Committee of the District Fair Association of Du Quoin met as above, and on motion, it was unanimously resolved that the hospitalities of the city of Du Quoin are tendered to the State Agricultural Board of Illinois, and that we accept the specifications required by said Board for the location of the State Fair for the years 1871 and 1872. Hotels will only require their regular charges; citizens have agreed to throw open their doors to visitors during the Fair, for which moderate charges only will be made. Merchants will close their respective places of business for at least two days of the Fair. And it is also further agreed that in case of the acceptance of the above bid, that a bond will be given, with approved security, for the faithful performance of the same.

Respectfully submitted, by order of the Executive Committee.

JOHN R. ELSTUN, *Secretary.*

FROM CENTRALIA.

To the Honorable Board Illinois State Agricultural Society:

GENTLEMEN: The undersigned, a Committee appointed by the Directors of the Union Fair Association of Centralia, are authorized to submit to your honorable body the following bid for the location of the State Fair for the years 1871 and 1872, viz: The Union Fair Association will enter into good and sufficient bonds to meet the requirements of the State Board as contained in specifications, provided the Union Fair Association be given the rental of the booths. The citizens of Centralia will open their houses for the accommodation of visitors, and have agreed, together with the proprietors of the hotels, to make only reasonable charges. The Illinois Central Railroad will run extra trains up and down the road for the accommodation of those who may desire to go to any of the many towns along the line of the roads—there being twelve towns within a radius of fifteen miles of Centralia, on the line of railroads. The Grounds are located at the terminus of an avenue one hundred feet wide, leading directly from the depot, which is located in the centre of the city, and less than one-half mile from the Fair Grounds. There is a ten-foot plank sidewalk connecting with the sidewalks of the city, and running through the center of the avenue to the gates of the Grounds, for the accommodation of those who may prefer to walk. There are two fine driveways, making access to the Grounds easy and pleasant. The Illinois Central Railroad has given us permission to attach pipes to its works, and has agreed to pump all the water we may need. Our Grounds have sufficient natural drainage to make perfect drainage easy, and are set to some five hundred forest trees.

Respectfully submitted.

W. H. RUSSELL. *Pres'*,
B. PULLEN, *Vice-Pres't*,
Union Fair Ass'n, Centralia.

On motion of Mr. Goltra,

Board resolved itself into Committee of the Whole to consider the proposals for locating the next State Fair. All visitors were requested to retire.

In Committee of the Whole, President Brown moved that the Board proceed to an informal vote on the location of the State Fair, and that the roll be called, and each member respond with the name of the locality of his choice. Carried.

Upon first vote—

For Du Quoin—Messrs. Brown, Kile, Reynolds, Edmunds, Fisher, Vittum, and Parker—7 votes.

For Centralia—Messrs. Goltra, Gillham, and Garland—3 votes.

For Decatur—Mr. Scott—1 vote.

For Ottawa—Messrs. Herrington, Rosenstiel, Dunlap, and Cobb—4 votes,

Resulting in no choice.

Upon second vote—

For Du Quoin—Messrs. Brown, Kile, Reynolds, Edmunds, Fisher, Vittum, and Parker—7 votes.

For Centralia—Messrs. Scott, Goltra, Gillham, and Garland—4 votes.

For Ottawa—Messrs. Herrington, Dunlap, Cobb, and Rosenstiel—4 votes.

Resulting in no choice.

Upon third vote—

For Du Quoin—Messrs. Brown, Kile, Reynolds, Edmunds, Fisher, Vittum, Goltra, and Parker—8 votes.

For Centralia—Messrs. Scott, Gillham, and Garland—3 votes.

For Ottawa—Messrs. Herrington, Rosenstiel, Dunlap, and Cobb—4 votes.

Resulting in no choice.

Upon fourth vote—

For Du Quoin—Messrs. Brown, Kile, Reynolds, Edmunds, Fisher, Scott, Vittum, Gillham, Parker, and Garland—10 votes.

For Ottawa—Messrs. Herrington, Rosenstiel, Dunlap, Cobb, and Goltra—5 votes.

So the Committee decided to hold the next Fair at Du Quoin.

On motion of Mr. Herrington,

Committee rose, reported that they had decided that the next State Fair should be held at DuQuoin, and asked that such decision be ratified.

And the Board unanimously ratified the decision of the Committee of the Whole.

On motion of Mr. Gillham,

Proceedings and votes of the Committee of the Whole were ordered to be spread in full upon the journal of the Board.

On motion of Mr. Edmunds,

The vote making the bill for "An act to create a Department of Agriculture in the State of Illinois" a special order for Wednesday evening, was reconsidered, and the consideration of said bill was then taken up. After slight modifications,

On motion of Mr. Edmunds,

The bill was recommended to the General Assembly for adoption.

On motion of Dr. Kile,

Adjourned to 7½ o'clock P. M.

7½ o'clock P. M.

Board met, pursuant to adjournment.

President Brown in the chair.

Mr. Rosenstiel called up the bill presented at January meeting by the Macon County Agricultural Society, for $54 50, and reported that the Auditing Committee considered the bill an unjust one.

On motion of Mr. Cobb,

Referred to Messrs. Gillham and Rosenstiel for final adjustment and settlement.

The report of the Committee to adjust the salary of the Secretary, coming up as unfinished business from the January meeting,

Mr. Dolton moved to amend the report by inserting $2,500 in lieu of $2,000.

Lost: Yeas 8, nays 8.

Those voting in the affirmative are, Messrs. Brown, Reynolds, Dolton, Herrington, Cobb, Scott, Webster, and Parker—8.

Those voting in the negative are, Messrs. Kile, Rosenstiel, Edmunds, Dunlap, Fisher, Vittum, Goltra, and Gillham—8.

The question then being on the adoption of the Report of the Committee,

It was decided in the affirmative: Yeas 14, nays 2.

Those voting in the affirmative are, Messrs. Brown, Kile, Reynolds, Herrington, Rosenstiel, Edmunds, Cobb, Dunlap, Scott, Fisher, Vittum, Goltra, Gillham, and Parker—14.

Those voting in the negative are, Messrs. Dolton and Webster—2.

And the Report of the Committee was concurred in.

The communication from Gen. Singleton, in relation to the claim of the Adams County Agricultural Society, was taken from the table.

Mr. A. B. McConnell, by invitation of the Board, gave his understanding of the claim.

On motion of Mr. Gillham,

A Committee of two was appointed to investigate the matter and report.

Messrs. Vittum and Rosenstiel were appointed such Committee.

On motion of Dr. Kile,

Adjourned to 9 o'clock to-morrow morning.

MARCH 1, 1871—9 *o'clock A. M.*

Board met, pursuant to adjournment.

President Brown in the chair.

Present : Messrs. Kile, Dolton, Herrington, Edmunds, Dunlap, Goltra, Gillham, Parker, and Garland.

On motion of Mr. Gillham,

Board went into Committee of the Whole for consideration of Premium List for next State Fair.

Mr. Reynolds in the chair.

At noon, Committee rose, reported progress, and asked leave to sit again. Granted.

Messrs. Gillham and Scott asked and obtained leave of absence to visit the Industrial University.

Adjourned to 2 o'clock P. M.

2 o'clock P. M.

Board met, pursuant to adjournment.

Dr. Kile submitted the following form of petition, and moved its adoption. Carried.

To the Honorable Senate and House of Representatives of Illinois:

At a meeting of the State Board of Agriculture, held this first day of March, A. D. 1871, the following resolution was unanimously adopted:.

Resolved, That this Board most earnestly request of the Legislature that it will, at its present session, pass a law for the drainage of wet and overflowed lands in this State, and that it be so comprehensive in its provisions that it will be applicable to the reclamation of the lands in river bottoms, and also to the drainage of small tracts of land in every part of the State.

All of which is respectfully submitted.

The following petition was received and read:

To the Officers and Members of the Board of the Illinois State Agricultural Society:

GENTLEMEN: Believing that the best interests of the manufacturers of the West, the public generally, and your own interests as managers of the Society you represent, are not fully subserved by offering and awarding (at your annual exhibitions) premiums on a large class of agricultural implements, embracing Reapers, Mowers, Threshers, Wagons, Plows, Cultivators, Sulky Rakes, and a large list of other like articles, we respectfully petition your honorable body not to offer premiums on the same at your exhibition for 1871, being fully satisfied that such a course will be more satisfactory to exhibiters, and relieve the management of a very arduous duty. We, the undersigned manufacturers of Plows and Cultivators, pledge ourselves to the same interest in exhibiting our manufactures under this rule as heretofore.

PRINCETON MANUFACTURING COMPANY.
RICHARDS, VANDERGRAFF & CO.
DEERE & CO., *Moline, Ill.*
BASIL D. BUFORD, *Rock Island, Ill.*
HAPGOOD & CO., *Chicago, Ill.*
FURST & BRADLEY, *Chicago, Ill.*
T. CUMMINS & CO., *Dixon, Ill.*
T. D. BREWSTER & CO., *Peru, Ill.*

Board resolved itself into Committee of the Whole on Premium List, and

At 6 o'clock voted to take a recess to 7½ o'clock P. M.

—

7½ o'clock P. M.

Committee resumed consideration of the Premium List, and at 10 o'clock rose, reported progress and modifications of list as per memoranda in hands of the Secretary.

Report received and Committee released from further consideration of Premium List; whereupon,

Adjourned to 9 o'clock A. M. to-morrow.

MARCH 2, 1871—9 *o'clock A. M.*

Board met, pursuant to adjournment.

President Brown in the chair.

Present: Messrs. Kile, Reynolds, Dolton, Herrington, Rosenstiel, Dunlap, Cobb, Fisher, Vittum, Goltra, Webster, and Garland.

Mr. Goltra moved to adopt all premiums for Winter Meeting of the Board recommended by the Committee of the Whole.

On motion of Mr. Dolton,

Amended by striking out premiums on Green Fruits ; whereupon

The motion of Mr. Goltra, as amended, was adopted.

Dr. Kile moved to amend the report from the Committee of the Whole, by restoring the premium on Artificial Groves. Lost.

On motion of Mr. Edmunds,

Rules and regulations, reported by Committee of the Whole, were adopted.

On motion of Mr. Edmunds,

Mr. Scott was appointed a Committee on Pedigrees.

On motion of Mr. Edmunds,

The President was made Chairman of the Committee of Arrangements, and was authorized to appoint the Committee.

On motion of Mr. Reynolds,

The names of Auditing Committee (Messrs. Rosenstiel and Dunlap) were inserted in the list of rules and regulations, and said Committee was authorized to appoint and control their own police force; and that the duties of the Auditing Committee be those defined in the by-laws of 1867, 1869 and 1870.

On motion of Mr. Dolton,

Class A, as reported by the Committee of the Whole, was adopted.

On motion of Mr. Goltra,

Class B, as reported by the Committee of the Whole, was adopted.

Mr. Rosenstiel moved to restore the lot "French Merinos," to the Premium List.

On motion of Mr. Reynolds,

Amended, so as to offer premiums for Merinos bred with reference to "fineness of fleece," and also "weight of carcass and weight of fleece."

The motion, as amended, was adopted.

On motion of Mr. Edmunds,

Class C, as amended, was adopted.

On motion of Mr. Edmunds,

The words "or Magie," wherever occurring in Class D, were stricken out, and it was ordered that the breed of Swine, embraced in Lot 34, be designated in the Premium List as "Poland-China."

Class D was further amended, so as to offer a premium of $20 for "best Sow with five of her pigs, over three months old and under six months;" also for "best Sow with five of her pigs, under three months old," $20. No second premiums.

Class D, as amended, was then adopted.

On motion of Mr. Webster,

Resolved, That the speeches of the members of this Board, on matters touching the alteration of Premium List, be limited to five minutes.

Mr. Edmunds moved that the Board non-concur in the recommendation of the Committee of the Whole on Class E.

Mr. Dolton moved, as a substitute for the motion of Mr. Edmunds, that the Board adopt the recommendation of the Committee of the Whole. Lost. Ayes, 5; nays, 10.

Those voting in the affirmative are, Messrs. Reynolds, Dolton, Herrington, Cobb, and Fisher—5.

Those voting in the negative are, Messrs. Brown, Kile, Rosenstiel, Edmunds, Dunlap, Vittum, Goltra, Webster, Parker, and Garland—10.

Mr. Fisher moved that a Committee of three be appointed to report upon Class E, at 2 o'clock P. M. Carried.

Messrs. Fisher, Dolton, and Edmunds, were appointed such Committee.

Classes F, G, H, I, K, and L, were concurred in, as reported from the Committee of the Whole.

Mr. Vittum, from the Special Committee to consider the claim presented by the Adams County Agricultural Society, made a verbal report.

On motion of Mr. Dunlap,

The President was added to the Committee to consider the above mentioned claim, and the Committee was authorized to act upon their own discretion.

Committee of Arrangements was announced to consist of Messrs. Brown, Webster, Reynolds, Edmunds, Kile, and Goltra.

Committee to visit and report on Farms and Nurseries was announced to consist of Messrs. Herrington, Fisher, and Vittum.

Adjourned to 2 o'clock P. M.

2 o'clock P. M.

Board met, pursuant to adjournment.

President Brown in the chair.

Present : As in the forenoon.

Mr. Fisher, from Special Committee on Class E, reported, viz :

HON. D. A. BROWN, *President.*

Your Committee, to whom was referred the revision of Class E (Poultry), would respectfully recommend the adoption of the following list of Premiums: A first premium, being $4, and second premium being $2. The list will be increased by 15 varieties, and will cost the Society, if all are taken, only $55 more than was allowed by the printed list of 1870.

Respectfully submitted.

S. D. FISHER, *Chairman.*

Report received and adopted, and Premium List ordered to be arranged in accordance therewith.

Mr. Rosenstiel, from Special Committee, reported, viz :

To the Executive Committee Illinois State Agricultural Society :

Your Committee, to whom was referred the grievance of Gen. Singleton, beg leave to report that a Committee be appointed to adjust the differences existing, and report to this Board.

D. A. BROWN,
D. W. VITTUM, JR.,
C. H. ROSENSTIEL,
Committee.

Report adopted, and Messrs. Brown, Edmunds, and Fisher, appointed such Committee.

On motion of Dr. Kile,

The by-laws of the last Board were adopted for the government of this Board, with the amendment fixing the salary of the Secretary at $2,000 per year, by the following vote :

Those voting in the affirmative are, Messrs. Brown, Kile, Herrington, Edmunds, Dunlap, Cobb, Fisher, Vittum, and Webster—9.

Those voting in the negative are, Messrs. Reynolds and Dolton—2.

Board proceeded to appointment of Awarding Committees for Fair of 1871, and, at 6 o'clock,

Adjourned to 7½ o'clock P. M.

—

7½ o'clock P. M.

Board met, pursuant to adjournment.

President Brown in the chair.

Mr. Reynolds offered the following :

Resolved, That Vice-President Rosenstiel be and he is hereby appointed a Committee to obtain passes and arrange for transportation with the railroad companies having offices at Chicago, on behalf of the Board; and that Vice-President Parker be and he is hereby appointed a Committee for the same purpose, in respect to transportation lines on the Western rivers, and in the Southern States.

Amended, by adding the name of Mr. Reynolds to that of Mr. Rosenstiel, and the resolution adopted.

On motion of Dr. Kile,

The President and Secretary were appointed a Committee to attend to and order printing, at their discretion.

Adjourned to 9 o'clock A. M. to-morrow.

March 8, 1871—9 *o'clock A. M.*

Board met, pursuant to adjournment.

President Brown in the chair.

Present: Messrs. Rosenstiel, Edmunds, Dunlap, Vittum, Goltra, Webster, Gillham, and Garland.

Mr. Gillham asked for the use of the Rooms of this Society for meetings of the Legislative Farmers' Club. Granted.

On motion of Mr. Dunlap,

The Board then adjourned, *sine die.*

D. A. BROWN, *President.*

A. M. Garland, *Secretary.*

PRESIDENT'S OFFICE ON FAIR GROUNDS,
Du Quoin, *September* 25, 1871.

Board met, on call of the President.

President Brown in the chair.

Present: Messrs. Reynolds, Dolton, Herrington, Rosenstiel, Edmunds, Dunlap, Cobb, Fisher, Vittum, Goltra, Webster, Gillham, Parker, and Garland.

President Brown called attention to the necessity for some understanding with the municipal authorities of the city of Du Quoin with regard to the control of "side shows" outside the Grounds.

After expression of views by Messrs. Brown, Herrington, Edmunds, Webster, Fisher, Reynolds, Dolton, and Rosenstiel, it was,

On motion of Mr. Reynolds,

Resolved, That the General Superintendent be and he is hereby instructed to take all lawful measures necessary to prevent the exhibition of shows within two miles of the Fair Grounds, during the present Fair of this Society.

Mr. Gillham called attention to the need of water at the southwest corner of the Grounds.

On motion of Mr. Dolton,

The General Superintendent was authorized to provide water at such points on the Grounds as, in his judgment, it may be needed.

On motion of Mr. Cobb,

Adjourned to 5 o'clock P. M.

---

5 o'clock P. M.

Board met, pursuant to adjournment.

President Brown in the chair.

Mr. Gillham, General Superintendent, reported that he had had a conversation with the Mayor of the city of Du Quoin, and that no definite arrangement had been arrived at with that officer, and asked for further instructions from the Board.

On motion of Mr. Rosenstiel,

Ordered, That the East gate be used as an entrance, and that the South gate be used as an exit gate, and that an officer be stationed on the road between the Fair Grounds and the city to advise the public of the change.

Mr. Parker, Superintendent of Class G, asked for instructions as to entries by Treasurers of County Agricultural Societies.

On motion of Mr. Reynolds,

Ordered, That parties be allowed to elect in which capacity they exhibit; but they will not be allowed to combine individual lots, when entered as such, and show them as county collections.

On motion of Mr. Webster,

Adjourned to meet at call of the President.

BOARDING HOUSE,
DU QUOIN, *September* 26, 1871.—7 *P. M.*

Board met, on call of the President.

President Brown in the chair.

Present: Messrs. Reynolds, Herrington, Dunlap, Cobb, Scott, Vittum, Gillham, Parker, Kile, and Garland.

Mr. Reynolds reported that the programme in Class A, had been carried out in full to this time.

On motion of Mr. Reynolds,

Ordered, That Lot 6. Class A, be so changed as to omit Ayrshires, and that a lot be made for Ayrshires, to be numbered 6½.

Mr. Cobb reported satisfactory progress in Class B, and mentioned request of certain parties for formation of a lot for single mules.

Mr. Webster reported Class K filling up, and that the same would be in good order to-morrow morning.

Mr. Gillham called attention to the probable necessity for requiring teams to return to the city by a different route, to prevent accidents; also, that the lettering of buildings would be completed to-morrow morning, as fast as could be progressed with. Also, that water was plenty on the grounds, and that teams were distributing it as fast as it was needed.

President called attention to the proposition of parties to run machinery.

On motion of Mr. Cobb,

Ordered, That the sleeping car for use of the Board be brought on the Grounds, and that the Reception Committee be authorized to look after and control the said car.

Adjourned to meet at call of the President.

PRESIDENT'S OFFICE ON FAIR GROUNDS,
Du Quoin, *September* 28, 1871.

Board met, on call of the President.

President Brown in the chair.

Present : Messrs. Reynolds, Dolton, Herrington, Dunlap, Vittum, Webster, Gillham, Parker, Kile, and Garland.

Mr. Gillham stated that an altercation between the police and a party who refused to produce authority for remaining on the Fair Grounds during the night, had occurred.

A number of witnesses were examined without showing that any blame attached to any one in the employ of the Board.

Adjourned to meet at call of the President.

PRESIDENT'S OFFICE ON FAIR GROUNDS,
Du Quoin, *September* 29, 1871.

Board met, on the call of the President.

President Brown in the chair.

Present: Messrs. Reynolds, Dolton, Herrington, Scott, Fisher Cobb, Vittum, Goltra, Webster, Parker, Kile, and Garland.

The several Superintendents of Departments reported every thing ready for the payment of premiums.

The Secretary was authorized to issue checks for premiums as fast as called for.

President called attention to the suit of Gen. Singleton against the State Agricultural Society, and asked the Board to take such action in the premises as was thought proper.

On motion of Mr. Webster, as amended by Mr. Reynolds,

Messrs. Brown, Fisher and Edmunds, and Treasurer Bunn, were appointed to take charge of the interests of the State Agricultural Society in the suit of Gen. Singleton, and that they be authorized to take such steps as to them may seem proper, and for the best interests of the State Agricultural Society.

And thereupon, the Board adjourned, *sine die.*

D. A. BROWN, *President.*

A. M. GARLAND, *Secretary.*

OFFICIAL LIST OF AWARDS

AT THE

NINETEENTH ANNUAL EXHIBITION

HELD SEPTEMBER 25-30, 1871.

CLASS A—CATTLE.

JOHN P. REYNOLDS, *Superintendent.*

LOT 1—SHORT HORN BULLS.

Best Bull four years and over:	
First premium to J. H. Pickrell, Harristown, “Baron Booth of Lancaster”	$30
Second premium to H Sodowsky & Son, Indianola, “Sucker Boy.”	20
Best Bull three years and under four:	
First premium to W. S. King, Minneapolis, Minn., “Scotsman”	30
Second premium to W. S. King, Minneapolis, Minn., “Old Sam”	20
Best Bull two years and under three:	
First premium to H. Sodowsky & Son, “Vermilion Duke”	30
Second premium to Timothy Day, Winchester, Iowa, “Major Story”	20
Best Bull one year and under two:	
First premium to A. W. Allmon, Salem, “Third Duke of Moscow”	30
Second premium to J. H. Pickrell, Harristown, “Baron Lewis”	20
Best Bull Calf under one year and over six months:	
First premium to W. S. King, Minneapolis, Minn., “Governor-General”	30
Second premium to J. H. Pickrell, Harristown, “Baron Louanjo”	20
Best Bull Calf under six months:	
First premium to J. H. Norton, Richview	30
Second premium to A. C. Shropshire, Leesburg, Ky.	20

Awarding Committee.—Thomas A. Apperson, Ætna; Charles Musson, South Pass; B. C. Ward, Tower Hill; Anthony Steele, Steele's Mills; Louis Wells, Du Quoin.

LOT 2—SHORT HORN COWS AND HEIFERS.

Best Cow over four years:
First premium to W. S. King, Minneapolis, Minn., "Henrietta" $25
Second premium to A. C. Shropshire, Leesburg, Ky., "Louan of Airdie" 15

Best Cow three years and under four:
First premium to Stephen Dunlap, Jacksonville 25
Second premium to J. H. Pickrell, Harristown, "Bride 15th" 15

Best Heifer two years and under three:
First premium to Gus. Shropshire, Paris, Ky., "Fannie Forrester" 25
Second premium to S. Dunlap, Jacksonville, "Roxy" 15

Best Heifer one year and under two:
First premium to W. S. King, Minneapolis, Minn., "Lady Brough" 25
Second premium to E. Iles, Springfield, "Maid of Faith" 15

Best Heifer Calf under one year and over six months:
First premium to J. H. Pickrell, Harristown, "Louan Hill, 4th" 15
Second premium to W. S. King, Minneapolis, Minn., "Hillhurst Rose" 10

Best Heifer Calf under six months:
First premium, S. Dunlap, Jacksonville, "Ida Wood" 10
Second premium to J. H. Pickrell, Harristown, "Ophie Pierce" 5

Awarding Committee.—S. B. Burchard, Kankakee; Anthony Steele, Steele's Mills; W. H. Hawkins, Aurora; Thomas A. Apperson, Ætna; M. J. Ferguson, Mattoon.

LOT 3.—HEREFORD BULLS.

Best Bull four years and over;
First premium to W. W. Aldrich, Elyria, Ohio, "Bristol Bill" $30

Best Bull one year and under two:
First premium to C. H. West, Kinmundy, "Monarch" 30

Best Bull Calf under one year and over six months:
First premium to W. W. Aldrich, Elyria, Ohio, "Bismark" 30

Best Bull Calf under six months:
First premium to W. W. Aldrich, Elyria, Ohio, "Gen. Sotham" 30
Second premium to W. W. Adrich, Elyria, Ohio, "Ohio Hero" 20

Awarding Committee.—S. B. Burchard, Kankakee; J. Skeavington, Albion; Richard Gibson, London, Canada West.

LOT 4.—HEREFORD COWS AND HEIFERS.

Best Cow over four years:
First premium to W. W. Aldrich, Elyria, Ohio, "Eda" $25
Second premium to W. W. Aldrich, Elyria, Ohio, "Florena," 15

Best Cow three years and under four:
First premium to W. W. Aldrich, Elyria, Ohio, "Rose" 25

Best Heifer two years and under three:
First premium W. W. Aldrich, Elyria, Ohio, "Primrose, 2d" 25

Best Heifer one year and under two:
First premium to C. H. West, Kinmundy, "Gem of Lorraine" 25

Best Heifer Calf under one year and over six months:	
First premium to W. W. Aldrich, Elyria, Ohio, "Perfection"	$15
Second premium to W. W. Aldrich, Elyria, Ohio, "British Lady"	10
Best Heifer Calf under six months:	
First premium to W. W. Aldrich, Elyria, Ohio, "Eugenie"	10
Second premium to W. W. Aldrich, "Queen of the Meadow"	5

Awarding Committee.—James Wadsworth, Chicago; S. B. Burchard, Kankakee; Joseph Skeavington, Albion; Philander Gould, Bone Gap; Richard Gibson, London, Canada West.

LOT 5—DEVON BULLS.

Best Bull three years and under four:	
First premium to Jas. Thomson, Philo, "Prairie Farmer"	$25
Second premium to Samuel Toms, Oshawa, Ont., "Prince Albert"	15
Best Bull one year and under two:	
First premium to James Boyle, Ayers' Point, "Red Cloud"	25
Second premium to W. J. Walker, Du Quoin, "Red Sky"	15
Best Bull Calf under six months:	
First premium to Samuel Toms, Oshawa, Ont	10
Second premium to James Thomson, Philo, "Prairie Lad"	5

DEVON COWS AND HEIFERS.

Best Cow over four years:	
First premium to James Thomson, Philo, "Cherry"	$25
Second premium to James Thomson, Philo, "Pretty Maid"	15
Best Cow three years and under four:	
First premium to James Christie, Ayers' Point, "Golden 2d"	25
Second premium to Samuel Toms, Oshawa, Ont	15
Best Heifer two years and under three:	
First premium to C. M. Clark, Benton, "Crocus"	15
Best Heifer Calf under one year and over six months:	
First premium to C. M. Clark, Benton	15
Best Heifer Calf under six months:	
First premium to James Thomson, Philo, "Perfection"	10
Second premium to James Thomson, Philo, "Prairie Lassie"	5

Awarding Committee.—Moses Dean, Sycamore; Anthony Steele, Steele's Mills; James H. Scott, Shiloh; Charles Musson, South Pass; Thomas A. Apperson, Ætna.

LOT 6—ALDERNEYS, JERSEYS, AND OTHER MILCH BREEDS NOT OTHERWISE PROVIDED FOR.

Best Bull four years and over:	
First premium to H. J. Cox, Tamaroa, "Duke of Indiana"	$20
Best Bull two years and under three:	
First premium to Samuel C. Colt, Hartford, Conn., "Pierrot"	20
Second premium to V. Barber, Decatur, "Hector"	10
Best Bull one year and under two:	
First premium to Matthew Kirkwood, Sparta, "Von Moltke"	20

Best Bull Calf under one year and over six months:	
First premium to V. Barber, Decatur	$10
Best Bull Calf under six months:	
First premium to V. Barber, Decatur	10

ALDERNEY COWS AND HEIFERS.

Best Cow over four years:	
First premium to Samuel C. Colt, Hartford, Conn., "Belle of Farmington"	$20
Second premium to V. Barber, Decatur, "Buttercup"	10
Best Cow over three and under four:	
First premium to Samuel C. Colt, Hartford, Conn., "Labiche"	20
Second premium to Samuel C. Colt, Hartford, Conn., "Kitty Lightfoot"	10
Best Heifer over two and under three:	
First premium to Samuel C. Colt, Hartford, Conn., "Emma 2d"	20
Second premium to H. J. Cox, Tamaroa, "Buttercup"	10
Best Heifer over one and under two:	
First premium to Samuel C. Colt, Hartford, Conn., "Mayflower"	20
Second premium to Samuel C. Colt, Hartford, Conn., "Caprice 2d"	10
Best Heifer Calf under one year and over six months:	
First premium to Samuel C. Colt, Hartford, Conn., "Kitty Lightfoot 2d"	10
Best Heifer Calf under six months:	
First premium to H. J. Cox, Tamaroa, "Victoria"	10

Awarding Committee.—James Wadsworth, Chicago; Jos. Skeavington, Albion; Ansel A. Gould, Bruno Gansel, Hyde Park.

LOT 6½—AYRSHIRES.

Best Bull over four years:	
First premium to J. A. Malone, Sparta, "Pattie"	$20
Best Bull three and under four:	
First premium to W. S. King, Minneapolis, Minn., "Rob Roy"	20
Best Bull Calf under one year:	
First premium to W. S. King, Minneapolis, Minn., "Canuck"	10
Best Cow over four years:	
First premium to W. S. King, Minneapolis, Minn., "Bonnie Doon"	20
Second premium to W. S. King, Minneapolis, Minn., "Winnie"	10
Best Heifer two years and under three:	
First premium to W. S. King, Minneapolis, Minn., "Lady Ayr 2d"	20
Second premium to W. S. King, Minneapolis, Minn., "Sweet Rose"	10
Best Heifer one year and under two:	
First premium to W. S. King, Minneapolis, Minn., "Niobe",	20
Second premium to W. S. King, Minneapolis, Minn., "Carrie"	10
Best Heifer Calf under six months:	
First premium to W. S. King, Minneapolis, Minn., "Bonnie Doon 3d"	10

Awarding Committee.—Moses Dean, Sycamore; Anthony Steele, Steele's Mills; T. A. Apperson, Ætna; James H. Scott, St. Clair county; Charles Musson, South Pass.

LOT 7—MILCH COWS.

Best Milch Cow of any breed:

First premium to C. S. Butler, Payson, "Nellie"	$30

Awarding Committee.—Moses Dean, Sycamore; Thos. A. Apperson, Ætna; James H. Scott, St. Clair county; Charles Musson, South Pass; Anthony Steele, Steele's Mills.

LOT 8—GRADES AND CROSSES.

Best Cow three years or over:	
First premium to C. S. Butler, Payson, "Pinkey"	$15
Second premium to J. H. Norton, Richview, "Laura"	10
Best Heifer two years and under three:	
First premium to J. H. Norton, Richview	15
Second premium to C. S. Butler, Payson, "Daisy"	10
Best Heifer one year and under two:	
First premium to Jo. Chorn, Towanda, "Cynthia"	15
Second premium to H. J. Cox, Tamaroa	10
Best Heifer Calf one year:	
First premium to Jo. Chorn, Towanda, "Nora"	10
Second premium to Jo. Chorn, Towanda, "Mary"	5

Awarding Committee.—Moses Dean, Sycamore; Anthony Steele, Steele's Mills; Charles Musson, South Pass; J. T. Whelpley, South Pass; T. A. Apperson, Ætna.

LOT 9—FAT CATTLE OF ANY BREED.

Best fat Bullock four years and over:

First premium to T. C. Funk, Heyworth	$20

Awarding Committee.—George W. Funk, McLean; Charles Musson, South Pass; B. C. Ward, Tower Hill; Thos. A. Apperson, Ætna; S. W. True, Mattoon.

LOT 10—WORK OXEN AND STEERS.

No awards were made in this lot.

LOT 11—HERDS—OPEN TO ALL BREEDS.

Best Bull and five Cows, or Heifers, one year and upward, and owned by one individual or previously existing firm:	
First premium to Wm. S King, Minneapolis, Minn., "Old Sam" and five Cows	$100
Second premium to J. H. Pickrell, Harristown, "Baron Booth of Lancaster" and five Cows	50
Best five head of Calves, male and female, under one year, and owned by one individual or previously existing firm:	
First premium to J. H. Pickrell, Harristown	50
Second premium to W. W. Aldrich, Elyria, Ohio	25

Awarding Committee.—James Gaines, Ridge Farm; Wm. Watson, Hillsboro, Oregon; John Cunningham, Salem; Dr. G. Sprague, DesMoines, Iowa; Wm. L. Barton, Kankakee.

LOT 12—HERDS FROM ONE BULL—OPEN TO ALL BREEDS.

Best five Cattle, male or female, of any age, without regard to ownership, the get of one Bull; the sire to be shown with the herd, and considered in making the award:

First premium to J. H. Pickrell, Harristown, "Baron Booth of Lancaster" and five Calves	$100
Second premium to Jo. Chorn, Towanda, "Counselor" and five Calves	50

Best Cow, shown with two of her Calves:

First premium to J. H. Pickrell, Harristown, "Louan 37th" and Calves $100

Second premium to J. G. Taylor & Son, Decatur, "Louan 20th" and Calves.......... 50

Awarding Committee.—S. W. True, Mattoon; M. J. Ferguson, Mattoon; Philander Gould, Bone Gap; George W. Funk, McLean; Thos. A. Apperson, Ætna; Louis Wells, Du Quoin.

LOT 13—SWEEPSTAKES.

Best Cow or Heifer of any age:

First premium to Gus. Shropshire, Paris, Ky., "Fanny Forrester" $100

Second premium to S. Dunlap, Jacksonville, "Roxy" 50

Best Bull of any age:

First premium to J. H. Pickrell, Harristown, "Baron Booth of Lancaster"........... 100

Second premium to W. S. King, Minneapolis, Minn., "Old Sam" 50

Awarding Committee.—John Landrigan, Albion; Samuel Hess, Vienna; S. J. Moore, DuQuoin; A. J. Kuykendall, Vienna; Wiley Buckles, Champaign.

CLASS B—HORSES, JACKS AND MULES.

EMORY COBB, *Superintendent.*

LOT 14—HORSES—THOROUGHBREDS.

STALLIONS.

Best Stallion four years and over:

First premium to C. Twyford & Sons, Tolono, "Doswell." $30

Second premium to Jas. Wadsworth, Chicago, "Creighton." 20

Best Stallion three years and under four:

First premium to J. E. Reardon, Shawneetown, "Woodford."...................... 25

Second premium to A. G. Carle, Urbana, "Sam Brady."........................... 15

Best Stallion Colt over two years and under three:

First premium to G. W. Waters, Glendale, "Bob Lamar."......................... 25

Second premium to C. Twyford & Sons, Tolono, "Doswell, Jr." 15

Best Stallion Colt over one year and under two:

First premium to A. G. Carle, Urbana, "Charley Geary."........................ 25

Second premium to G. R. Marble, Benton, "Logan."............................. 15

MARES.

Best Brood Mare four years or over:

First premium to G. W. Waters, Glendale, "Fille de Goie."......................$30

Second premium to A. G. Carle, Urbana, "Cinderilla." 20

Best Filly over three years and under four:

First premium to Wiley Buckles, Champaign, "Lizzy Visk." 25

Best Filly over two years and under three:

First premium to A. G. Carle, Urbana.. 25

Best Sucking Mare Colt:

First premium to C. Twyford & Sons, Tolono, "Ella." 15

Second premium to G. R. Marble, Benton 10

Awarding Committee.—John Landrigan, Albion; J. T. Irish, Venice; A. E. Davis, Kankakee; Anthony Steele, Steele's Mills; H. Sodowsky, Indianola.

LOT 15—ROADSTERS.

STALLIONS.

Best Stallion four years and over:	
First premium to S. B. Carpenter, Tolono, "Mambrine Eclipse."	$30
Second premium to W. M. Tipton, Odin	20
Best Stallion over three years and under four:	
First premium to Geo. P. Davis, Bloomington, "Maroa"	20
Second premium to S. B. Carpenter, Tolono	10
Best Stallion over two years and under three:	
First premium to J. T. Gass, Bloomington, "Baby."	20
Second premium to Geo. P. Davis, Bloomington, "Midnight."	10
Best Stallion over one year and under two:	
First premium to Wiley Buckles, Champaign, "Barnton."	20
Second premium to G. W. Allen, Murphysboro, "Dan Rice."	10
Best Horse Colt under one year:	
First premium to John McConnell, Dix, "Pat"	15
Second premium to A. G. Carle, Urbana, "Bill"	10

MARES.

Best Mare four years or over:	
First premium to C. B. Carpenter, Tolono, "Infant"	$25
Second premium to Truman King, Du Quoin	20
Best Mare over three years and under four:	
First premium to Geo. P. Davis, Bloomington, "Lillie Von"	15
Second premium to J. S. Keckley, Bloomington, "Katie Putnam"	10
Best Filly over two years and under three:	
First premium to A. G. Carle, Urbana, "Jennie"	15
Second premium to James Wadsworth, Chicago	10
Best Filly over one year and under two:	
First premium to Humphry Cruz, DeSoto, "Nelly"	15
Best Mare Colt under one year:	
First premium to Thomas Bradford, Macedonia	15

Awarding Committee.—S. G. Egbert, Metamora; E. B. Harlan, Springfield; W. H. Russell, Centralia; H. Babcock, Onarga; S. D. Dole, Mattoon. Mr. White, Decatur, substituted for Mr. Russell, after passing upon two-year-old Stallions.

LOT 16—HORSES OF ALL WORK.

STALLIONS.

Best Stallion over four years:	
First premium to C. A. Johnson, Macedonia, "Lexington"	$30
Second premium to J. W. Heaton, Reynoldsburg	20
Best Stallion Colt over three years and under four:	
First premium to Matthew McMillion, Sparta, "John Baker"	20
Second premium to C. B. Carpenter, Tolono	10
Best Stallion Colt over two years and under three:	
First premium to John Murphy, Frankfort	20
Second premium to Osborn Kershner, Bloomington, "Gip"	10
Best Stallion Colt over one year and under two:	
First premium to Wiley House, Du Quoin	15
Second premium to Wm. Hungate, Macedonia	10

MARES.

Best Brood Mare over four years:	
First premium to Wiley Buckles, Champaign, "Jenny Lind"	$25
Second premium to Wm. M. Tipton, Odin, "Julia"	15
Best Filly over three years and under four:	
First premium to John Phelps, Golconda, "Mayflower"	20
Second premium to Wm. Moore, Benton, "Mollie"	10
Best Filly over two years and under three:	
First premium to E. Dillon & Co., Normal, "Idol"	20
Best Filly over one year and under two:	
First premium to S. Nance, Benton	20
Second premium to W. A. Bost, DeSoto	10
Best Sucking Mare Colt:	
First premium to C. A. Johnson, Macedonia	15
Best Sucking Horse Colt:	
First premium to George Elliott, Harristown	20
Second premium to Jas. Lancaster, Elkville	10

Awarding Committee.—Anthony Steele, Steele's Mills; Bruno Gansel, Hyde Park; G. W. Smith, Christian county.

LOT 17—DRAFT HORSES.

STALLIONS.

Best Stallion over four years:	
First premium to Jas. A. Perry, Clifton, "Duke de Chartres"	$30
Second premium to Jas. A. Perry, Clifton, "Denmark"	20
Best Stallion Colt over three years and under four:	
First premium to John Murray, Bloomington, "Tom Napoleon"	20
Second premium to N. M. Jones, Towanda, "Sampson"	10
Best Stallion Colt over two years and under three:	
First premium to E. Dillon & Co., Normal, "Normal"	20
Second premium to John C. Ramsey, Onarga, "Bonaparte"	10
Best Stallion Colt over one year and under two:	
First premium to E. Dillon & Co., Normal, "Model"	20
Best Stallion Colt under one year:	
First premium to E. Dillon & Co., Normal, "Bob Ridley"	15
Second premium to E. Dillon & Co., Normal, "Welcome"	10

MARES.

Best Brood Mare over four years:	
First premium to E. Dillon & Co., Normal, "Lady Hattie"	25
Second premium to Jas. A. Perry, Clifton, "Iowa"	15
Best Filly over three years and under four:	
First premium to E. Dillon & Co., Normal, "Lucy"	20
Second premium to Eli Beckley, Coulterville, "Kate"	10
Best Filly over two years and under three:	
First premium to E. Dillon & Co., Normal, "Rosa Bonheur"	20
Second premium to E. Dillon & Co., Normal, "Theresa"	10
Best Filly over one year and under two:	
First premium to E. Dillon & Co., Normal, "Ida"	20
Second premium to Saml. L. Boyd, Tilden, "Sal"	10

Best Sucking Mare Colt:	
First premium to E. Dillon & Co., Normal, "Luretta"	$20
Second premium to E. Dillon & Co., Normal, "Belle of Normal"	10
Best span for draft without regard to sex, to be tested in harness:	
First premium to Jas. A. Perry, Clifton	20
Second premium to Russ, McCourtie & Slattery, Onarga, "Chartres" and "Grey Duke"	10

Awarding Committee.—John Virgin, Fairbury; P. S. Crawford, McHenry; George W. Black, Sonora.

LOT 18—SADDLE HORSES.

Best Saddle Stallion over four years:	
First premium to J. W. Heaton, Reynoldsburg	$20
Second premium to James Wadsworth, Chicago, "Creighton"	10
Best Saddle Stallion under four years:	
First premium to John Quinn, Mt. Vernon	20
Second premium to Clem Bundy, Raleigh	10
Best Saddle Mare over four years:	
First premium to J. R. Scott, Champaign	20
Second premium to Humphrey Cruz, De Soto, "Fanny"	10
Best Saddle Gelding over four years:	
First premium to John A. Cart, Bloomington	20
Second premium to W. M. Tipton, Odin, "Dixie"	10
Best Saddle Gelding under four years:	
First premium to J. W. Heaton, Reynoldsburg	20

Awarding Committee.—George W. Black, Sonora; Joseph Chorn, Towanda; W. F. Keady, Kankakee; G. Smith, Davenport, Iowa; S. W. Egbert, Metamora.

LOT 19—CARRIAGE HORSES.

Best pair of Carriage Mares, to be shown in harness:	
First premium to W. M. Tipton, Odin, "Minnie" and "Julia"	$50
Second premium to M. Moore, Wilbanks	25
Best pair of Carriage Geldings, to be shown in harness:	
First premium to J. W. McDonald, Carbondale	50
Second premium to W. B. Taylor, Randolph county	25
Best Buggy Mare or Gelding:	
First premium to C. B. Carpenter, Tolono	25
Second premium to Wm. Lipe, Du Quoin	15

Awarding Committee.—S. Harkey, Hillsboro; S. D. Dole, Mattoon; M. C. Crawford, Jonesboro; C. B. Carpenter, Tolono; H. N. Champlin, Kaneville.

LOT 20—GENTLEMEN'S DRIVING HORSES.

Best pair Mares, to be shown in harness, style and action to be the test:	
First premium to C. B. Carpenter, Tolono	$75
Second premium to Geo. P. Davis, Bloomington	50
Best pair of Geldings, to be shown in harness, style and action to be the test:	
First premium to W. M. Tipton, Odin, "Pilot" and "Dinah"	75
Second premium to R. McCart, Bloomington	50

Best single Stallion, to be shown in harness, style and action to be the test:
First premium to Geo. P. Davis, Bloomington $100
Second premium to J. C. McConnell, Dix 50

Best single Mare, to be shown in harness, style and action to be the test:
First premium to C. B. Carpenter, Tolono, "Gipsy" 75
Second premium to G. P. Davis, Bloomington 50

Best Gelding, to be shown in harness, style and action to be the test:
First premium to Philip Minzer, Centralia 50
Second premium to Wm. M. Tipton, Odin, "Pilot" 25

Awarding Committee.—W. H. Hawkins, Aurora; A. E Davis, Kankakee; John Landrigan, Albion; J. H. Spears, Tallula.

LOT 21—SWEEPSTAKES—Open to All.

Best Stallion and five of his Colts, of any age, in harness or not, at the option of the owner:
First premium to G. P. Davis, Bloomington, "Mambrino Prince" $100
Second premium to C. A. Johnson, Macedonia 50

Best Mare with two of her Colts, to be shown by the bridle:
First premium to Wiley Buckles, Champaign 75
Second premium to A. G. Carle, Urbana, "Cinderilla" 50

Best Stallion of any age or breed, to bridle:
First premium to J. G. Lycan, Paris 100
Second premium to John Murphy, Frankfort 50

Best Mare of any age or breed, to bridle:
First premium to Wm. M. Tipton, Odin, "Minnie" 100
Second premium to G. P. Davis, Bloomington 50

Awarding Committee.—J. H. Pickrell, Harristown; M. C. Kell, Centralia; H. B. Plant, DuQuoin; Daniel Mooneyham, Benton.

LOT 22—JACKS, JENNETS AND MULES.

Best Jack three years or over:
First premium to Eli Beckley, Coulterville, "Warrior" $25
Second premium to John Wilbanks, Mt. Vernon, "Vasca" 15

Best Jack two years and under three:
First premium to Robert Ramsey, Ayers' Point, "John" 20

Best Jack one year and under two:
First premium to Robert Ramsey, Ayers' Point, "Sam" 20
Second premium to E. C. Mills, Salem 15

Best Jack sucking Colt:
Second premium to R. C. Jones, Tamaroa 5

Best Jennet three years or over:
First premium to E. C. Mills, Salem 20
Second premium to Robert Ramsey, Ayers' Point, "Betty" 10

Best span of Mules, to be tested by draft:
First premium to John McConnell, Dix, "Lucy" and "Sam" 20
Second premium to John Willbanks, Mt. Vernon 10

Best three year old Mule:
First premium to John Wilbanks, Mt. Vernon, "Sally" 15
Second premium to E. S. Dickens, Salem 10

Best two year old Mule:

First premium to Wm. Jackson, Du Quoin	$15
Second premium to Goodall & Campbell, Marion	10

Best one year old Mule:

First premium to Daniel Stine, Du Quoin	15
Second premium to John McLaughlin, Coulterville, "Luoe"	10

Best sucking Mule:

First premium to Wm. Lipe, Du Quoin	11
Second premium to John Willbanks, Mt. Vernon	5

Awarding Committee.—Ansel A. Gould, Albion; C. H. Dolton, Dolton Station; B. B. Vance, Vandalia.

LOT 23—SWEEPSTAKES FOR JACKS.

Best Jack of any age, shown with not less than three Mules of his get:

Premium to Goodall & Campbell, Marion	$100

CLASS C—SHEEP.

JAMES HERRINGTON, *Superintendent.*

LOT 24—LONG WOOLED.

Best Ram over two years:

First premium to Edward Iles, Springfield	$15
Second premium to Burdett Loomis, Hartford, Conn.	10

Best Ram over one and under two years:

First premium to Burdett Loomis, Hartford, Conn.	15
Second premium to Burdett Loomis, Hartford, Conn.	10

Best Ram Lamb under one year:

First premium to Edward Iles, Springfield	10
Second premium to R. C. Allen, Harristown	5

Best pen of three Ewes over two years:

First premium to Edward Iles, Springfield	15
Second premium to Burdett Loomis, Hartford, Conn.	10

Best pen of three Ewes over one year and under two:

First premium to Edward Iles, Springfield	15
Second premium to Burdett Loomis, Hartford, Conn.	10

Best pen of three Ewe Lambs under one year:

First premium to R. C. Allen, Harristown	15

Awarding Committee.—Graham Lee, Hamlet; John Turnbull, Elmira; J. Burwell, Minier.

LOT 25—MIDDLE-WOOLED, SOUTHDOWN, ETC.

Best Ram over two years:

First premium to Samuel Toms, Oshawa, Ontario	$15
Second premium to J. O'Bannon, Eminence, Ky.	10

Best Ram over one year and under two:

First premium to J. O'Bannon, Eminence, Ky.	15
Second premium to Samuel Toms, Oshawa, Ontario	10

Best Ram Lamb under one year:	
First premium to J. H. Pickrell, Harristown	$10
Second premium to Samuel Toms, Oshawa, Ontario	5
Best pen of three Ewes over two years:	
First premium to J. O'Bannon, Eminence, Ky.	15
Second premium to Samuel Toms, Oshawa, Ontario.	10
Best pen of three Ewes over one year and under two:	
First premium to J. H. Pickrell, Harristown	15
Second premium to J. O'Bannon, Eminence, Ky.	10
Best pen of three Ewe Lambs under one year:	
First premium to Samuel Toms, Oshawa, Ontario	15
Second premium to J. H. Pickrell, Harristown.	10

Awarding Committee.—Elwin Tinsley, Geneva; W. P. Sykes, Monmouth; S. J. Haight, Meriden.

LOT 26—MERINOS.

(Bred for fineness of wool and weight of fleece.)

Best Ram over two years:	
First premium to Charles Kelley, Wheaton, "Matchless"	$15
Second premium to Charles Kelley, Wheaton	10
Best Ram over one year and under two:	
First premium to Charles Kelley, Wheaton	15
Second premium to Thomas Taylor, Waynesville	10
Best Ram Lamb under one year:	
First premium to Charles Kelley, Wheaton	10
Second premium to Thomas Taylor, Waynesville	5
Best pen three Ewes over two years:	
First premium to Charles Kelley, Wheaton	15
Second premium to Charles Kelley, Wheaton	10
Best pen three Ewes over one year and under two:	
First premium to Thomas Taylor, Waynesville.	15
Second premium to Charles Kelley, Wheaton	10
Best pen three Ewe Lambs under one year:	
First premium to Charles Kelley, Wheaton	15
Second premium to Charles Kelley, Wheaton	10

Awarding Committee.—A. Harman, Anna; D. W. Lyerly, Anna; E. D. Rose, Pittsfield.

LOT 27—MERINOS.

(Bred for weight of fleece and weight of carcass.)

Best Ram over two years:	
First premium to Daniel Kelley, Wheaton	$15
Second premium to Daniel Kelley, Wheaton	10
Best Ram over one year and under two:	
First premium to Daniel Kelley, Wheaton	15
Second premium to Thomas Taylor, Waynesville	10

Best Ram Lamb under one year:

First premium to Daniel Kelley, Wheaton	$10
Second premium to Thomas Taylor, Waynesville	5

Best pen three Ewes over two years:

First premium to Daniel Kelley, Wheaton	15
Second premium to Daniel Kelley, Wheaton	10

Best pen three Ewes over one year and under two:

First premium to Daniel Kelley, Wheaton	15
Second premium to Daniel Kelley, Wheaton	10

Best pen three Ewe Lambs under one year:

First premium to Thomas Taylor, Waynesville	15
Second premium to Daniel Kelley, Wheaton	10

Awarding Committee.—Reese Osborn, Pinckneyville; David Schanafeldt, Salem; S. E. Stephenson, Salem; E. D. Rose, Pittsfield; E. Tinsley, Geneva.

LOT 28—CROSSES OF ANY BREEDS.

Best pen of three Ewes over two years:

First premium to Samuel Toms, Oshawa, Ontario	$10
Second premium to Thomas Taylor, Waynesville	5

Best pen of three Ewes over one year and under two:

First premium to Thomas Taylor, Waynesville	10
Second premium to Edward Iles, Springfield	5

Best pen of three Ewe Lambs:

First premium to Thomas Taylor, Waynesville	10
Second premium to A. Harrison, Bloomington	5

Awarding Committee.—Graham Lee, Hamlet; John Turnbull, Elmira; John Burwell, Minier.

LOT 29—FAT SHEEP.

Best three Fat Sheep over two years:

Premium to J. H. Pickrell, Harristown	$10

Best three Fat Sheep under two years:

Premium to George Elliott, Harristown	10

Awarding Committee.—Graham Lee, Hamlet; John Turnbull, Elmira; John Burwell, Minier.

LOT 30—SWEEPSTAKES.

(Open to all Fine-wooled Sheep.)

Best lot of Sheep of any age, not less than one Ram and nine Ewes:

First premium to Daniel Kelley, Wheaton	$50
Second premium to Charles Kelley, Wheaton	30

Awarding Committee.—N. M. Jones, Towanda; D. W. Lyerly, Anna; Reese Osborn, Pinckneyville.

LOT 31—SWEEPSTAKES.

(Open to all mutton breeds)

Best lot of Sheep of any age, not less than one Ram and nine Ewes:

First premium to Burdett Loomis, Hartford, Conn	$50
Second premium to Edward Iles, Springfield	30

Awarding Committee.—Reese Osborn, Pinckneyville; David Schanafeldt, Salem; S. E. Stephenson, Salem; E. Tinsley, Geneva; W. P. Sykes, Monmouth.

CLASS D—SWINE.

D. W. VITTUM, JR., *Superintendent.*

LOT 32—BERKSHIRES.

Best Boar two years and over:	
First premium to Jesse Cloyd, Champaign	$20
Second premium to J. H. Pickrell, Harristown	15
Best Boar one year and under two:	
First premium to J. G. Loose, Springfield	20
Second premium to L. T. Clark, Onarga	15
Best Boar six months and under one year:	
First premium to Jesse Cloyd, Champaign	15
Second premium to Wm. J. Brown, Decatur	10
Best Boar under six months:	
First premium to Samuel Toms, Oshawa, Ontario	10
Second premium to J. G. Loose, Springfield	5
Best Sow two years and over:	
First premium to Crowder Bros., Springfield, "Kate,"	20
Second premium to J. H. Pickrell, Harristown	15
Best Sow one year and under two:	
First premium to Crowder Bros., Springfield, "Lady Crary"	20
Second premium to Jesse Cloyd, Champaign	15
Best Sow six months and under one year:	
First premium to Chas. Snoad, Joliet	15
Second premium to Crowder Bros., Springfield, "Fashion"	10
Best Sow under six months:	
First premium to Samuel Toms, Oshawa, Ontario	10
Second premium to Miss Rose E. Snoad, Joliet	5
Best Sow, with litter of her pigs, not less than five, under three months:	
Premium to Jesse Cloyd	20
Best Sow, with litter of her pigs, not less than five, over three and under six months:	
Premium to H. S. Manon, Decatur	20

Awarding Committee.—W. S. Maus, Pekin; E. Burnes; Horace Bradley, Davenport, Iowa; Wm. H. Green, Cairo.

LOT 33—CHESTER WHITES.

Best Boar two years and over:	
First premium to Charles Snoad, Joliet	$20
Second premium to N. N. Jones, Normal	15
Best Boar one year and under two:	
First premium to A. L. Dimmick, Frankfort	20
Second premium to N. N. Jones, Normal	15

Best Boar six months and under one year:	
First premium to Charles Page, Du Quoin	$15
Second premium to N. N. Jones, Normal	10
Best Boar under six months:	
First premium to N. N. Jones, Normal	10
Second premium to Charles Snoad, Joliet	5
Best sow two years and over:	
First premium to N. N. Jones, Normal	20
Second premium to Charles Snoad, Joliet	15
Best Sow one year and under two:	
First premium to Charles Snoad, Joliet	20
Second premium to Charles Snoad, Joliet	15
Best Sow six months and under one year:	
First premium to N. N. Jones, Normal	15
Second premium to N. N. Jones, Normal	10
Best Sow under six months:	
First premium to N. N. Jones, Normal	15
Second premium to N. N. Jones, Normal	10
Best Sow with litter of her Pigs, not less than five, under three months:	
Premium to J. Q. A. Floyd, Springfield	20
Best Sow with litter of her Pigs, not less than five, over three and under six months:	
Premium to Charles Snoad, Joliet	20

Awarding Committee.—Moses Dean, Sycamore; Thomas J. Crowder, Springfield; A. B. Hulit, Canton; Jesse Cloyd, Champaign; Wm. J. Brown, Decatur.

LOT 34—POLAND-CHINA.

Best Boar two years and over:	
First premium to Shepard & Alexander, Charleston	$20
Second premium to L. T. Clark, Onarga	15
Best Boar one year and under two:	
First premium to Shepard & Alexander, Charleston	20
Second premium to Shepard & Alexander, Charleston	15
Best Boar six months and under one year:	
First premium to A. Harrison, Bloomington	15
Second premium to J. Q. Ayers, Moweaqua	10
Best Boar under six months:	
First premium to S. D. Mitchell, Clinton	10
Second premium to S. E. Arnold, Clinton	5
Best Sow two years and over:	
First premium to Shepard & Alexander, Charleston	20
Second premium to Shepard & Alexander, Charleston	15
Best Sow one year and under two:	
First premium to Dillon & Co., Normal	20
Second premium to Shepard & Alexander, Charleston	15
Best Sow six months and under one year:	
First premium to Shepard & Alexander, Charleston	15
Second premium to Dillon & Co., Normal	10

Best Sow under six months:	
First premium to Dillon & Co., Normal	$10
Second premium to J. Q. Ayers, Moweaqua	5
Best Sow with litter of her pigs, not less than five, under three months:	
Premium to A. Harrison, Bloomington	20
Best Sow with litter of her pigs, not less than five, over three months and under six:	
Premium to Dillon & Co., Normal	20

Awarding Committee.—A. B. Hulit, Canton; W. H. Grinnell, Kankakee; Horace Bradley, Davenport, Iowa; Daniel Mooneyham, Benton.

LOT 35—SUFFOLKS, CHINA, ESSEX AND OTHER SMALL BREEDS.

Best Boar two years and over:	
First premium to G. B. Roe, Paine's Point	$20
Second premium to Charles Snoad, Joliet	15
Best Boar one year and under two:	
First premium to G. B. Roe, Paine's Point	20
Best Boar six months and under one year:	
First premium to Charles Snoad, Joliet	15
Second premium to Charles Snoad, Joliet	10
Best Boar under six months:	
First premium to G. B. Roe, Paine's Point	10
Best Sow two years and over:	
First premium to Charles Snoad, Joliet	20
Second premium to G. B. Roe, Paine's Point	15
Best Sow one year and under two:	
First premium to G. B. Roe, Paine's Point	20
Second premium to L. T. Clark, Onarga	15
Best Sow under six months:	
First premium to G. B. Roe, Paine's Point	10

Awarding Committee.—A. B. Hulit, Canton; Geo. Elliott, Harristown; W. H. Grinnell, Kankakee; Daniel Mooneyham, Benton; Horace Bradley, Davenport, Iowa.

LOT 36—ALL LARGE BREEDS, MORGAN COUNTY WHITES AND CROSSES, EXCEPT BERKSHIRES, CHESTER WHITES AND POLAND-CHINA.

Best Boar two years and over:	
First premium to T. P. Harrison, Du Quoin	$20
Best Boar under six months:	
First premium to L. T. Clark, Onarga	10
Second premium to L. T. Clark, Onarga	5
Best Sow two years and over:	
First premium to Charles Snoad, Joliet	20
Second premium to N. N. Jones, Normal	15
Best Sow six months and under one year:	
First premium to Charles Snoad, Joliet	15
Best Sow under six months:	
First premium to L. T. Clark, Onarga	10
Second premium to L. T. Clark, Onarga	5

Awarding Committee.—A. B. Hulit, Canton; Geo, Elliott, Harristown; Horace Bradley, Davenport, Iowa; Daniel Mooneyham, Benton; W. H. Grinnell, Kankakee.

LOT 37—SWEEPSTAKES.

Best Boar and three Sows of any age:	
First premium to Shepard & Alexander, Charleston	$50
Best Boar of any age or breed:	
First premium to Shepard & Alexander, Charleston	25
Best Sow of any age or breed:	
First premium to Charles Snoad, Joliet	25

Awarding Committee.—A. M. Fauley, Urbana; Geo. W. Hileman, Du Quoin; Philip C. C Provartz, Du Quoin.

CLASS E—POULTRY.

James Herrington, *Superintendent.*

LOT 38—CHICKENS.

Best trio Light Brahmas:	
First premium to L. K. Scofield, Freeport	$4
Second premium to B. Sprague, Du Quoin	2
Best trio Dark Brahmas:	
First premium to C. S German, Springfield	4
Second premium to S. Schwartz, Elkville	2
Best trio Buff Cochins:	
First premium to W. H. Turner, Butler	4
Second premium to C. S. German, Springfield	2
Best trio Black Cochins:	
First premium to W. H. Turner, Butler	4
Best trio Gray Dorkings:	
First premium to J. Q. A Floyd, Springfield	4
Second premium to W. H. Turner, Butler	2
Best trio White Dorkings:	
First premium to W. H. Turner, Butler	4
Best trio Dominiques:	
First premium to W. H. Turner, Butler	4
Second premium to W. H. Turner, Butler	2
Best trio Black Spanish:	
First premium to Joseph I. Loose, Springfield	4
Second premium to J. Q. A. Floyd, Springfield	2
Best trio White Leghorns:	
First premium to W. H. Turner, Butler	4
Second premium to W. H. Turner, Butler	2
Best trio Golden Spangled Hamburgs:	
First premium to W. H. Turner, Butler	4
Second premium to W. H. Turner, Butler	2

Best trio Silver Spangled Hamburgs:

First premium to W. H. Turner, Butler	$4
Second premium to W. H. Turner, Butler	2

Best trio White-crested Black Polands:

First premium to A. B. Shaw, Franklin	4
Second premium to W. H. Turner, Butler	2

Best trio Silver Spangled Polands:

First premium to C. S. German, Springfield	4
Second premium to W. H. Turner, Butler	2

Best trio Black-breasted Red Game:

First premium to W. H. Turner, Butler	4

Best trio Creve Cœurs:

First premium to Joseph I. Loose, Springfield	4

Best trio Houdans:

First premium to Joseph I. Loose, Springfield	4
Second premium to J. Q. A. Floyd, Springfield	2

Best trio Bantams of any kind:

First premium to Joseph I. Loose, Springfield	4
Second premium to David Wright, Du Quoin	2

Best trio Guinea Fowls:

First premium to W. H. Turner, Butler	4
Second premium to W. H. Turner, Butler	2

Awarding Committee.—L. Z. Farwell, Freeport; Dr. C. R. Smith, Grayville; L. K. Scofield, Freeport; Thomas Lewis, Springfield.

LOT 39—TURKEYS, GEESE AND DUCKS.

Best pair Bronze Turkeys:

First premium to Joseph I. Loose, Springfield	$4
Second premium to A. M. Fauley, Urbana	2

Best pair White Turkeys:

First premium to Joseph I. Loose, Springfield	4
Second premium to W. H. Turner, Butler	2

Best pair Bremen Geese:

First premium to W. H. Turner, Butler	4
Second premium to Joseph I. Loose, Springfield	2

Best pair China (common) Geese:

First premium to Alvin Bowlin, Du Quoin	4
Second premium to W. H. Turner, Butler	2

Best pair Aylesbury Ducks:

First premium to A. M. Fauley, Urbana	4
Second premium to Joseph I. Loose, Springfield	2

Best pair Rouen Ducks:

First premium to W. H. Turner, Butler	4

Best pair Cayuga Ducks:

First premium to Joseph I. Loose, Springfield	4
Second premium to W. H. Turner, Butler	2

Best pair Muscovy Ducks:	
First premium to Joseph I. Loose, Springfield	$4
Second premium to W. H. Turner, Butler	2
Best pair Mallard Ducks:	
First premium to Wm. Lipe, Du Quoin	4
Best trio Pheasants:	
Premium to W. H. Turner, Butler	4
Best collection of Poultry of all kinds—pure breeds:	
Premium to Joseph I. Loose, Springfield	10
Best collection of Poultry of all kinds—mixed breeds:	
Premium to J. Q. A. Floyd, Springfield	10
Best and largest collection of Chickens:	
Premium to W. H. Turner, Butler	10

Awarding Committee.—L. Z. Farwell, Freeport; Dr. C. R. Smith, Grayville; L. K. Scofield, Freeport; Thomas Lewis, Springfield.

CLASS F.—MECHANIC ARTS.

SECTION 1.

M. C. GOLTRA, *Superintendent.*

LOT 40—LIGHT MACHINES AND HORTICULTURAL IMPLEMENTS.

Best Tenoning Machine:	
Premium to T. S. Brooks, York	Silver medal.
Best Wood Sawing Machine:	
Premium to Harrison & Co., Belleville	Silver medal.
Best Dog Power:	
Premium to W. P. Emmert, Freeport	Silver medal.
Best Smut Machine:	
Premium to Valentine Weismantel, Belleville	Silver medal.

Awarding Committee.—C. C. Burroughs, Decatur; S. M. Warner, Centralia; Wm. E. Fithian, St. Louis, Mo.

LOT 41—STOVES, CASTINGS AND WORKED METALS.

Best Cooking Stove for Wood:	
Premium to A. McCreery & Son, Du Quoin	Silver medal.
Best Cooking Stove for Coal:	
Premium to J. Bondinot, Tamaroa	Silver medal.
Best Heating Stove for Coal:	
Premium to Cushing Heating Co., Chicago	Silver medal.
Display of Copper Ware:	
Premium to A. McCreery & Son, Du Quoin	Silver medal.
Best Lamp for Kerosene:	
Premium to Moore & O'Donald, Clinton	Silver medal.

Best Fruit Dryer:
Premium to Israel Hoagland, Makanda .... Silver medal.

Best display of Mechanical Tools and Cutlery:
Premium to Henry Opp, Belleville .... Silver medal.

Awarding Committee.—James M. Thomas, Wyoming; S. D. Goodall, Du Quoin; S. M. Young, Jacksonville.

LOT 42—VEHICLES AND HOUSEHOLD FURNITURE.

Best display of Buggies:
Premium to Heinzelman & Bros., Belleville .... $10 and Silver medal.

Best Two-horse Carriage:
Premium to Heinzelman & Bros., Belleville .... Silver medal.

Best Top Buggy:
Premium to J. W Ludwig, Belleville .... Silver medal.

Best Open Buggy:
Premium to H. C. Williams & Co., Belleville .... Silver medal.

Best Sulky:
Premium to H. C. Williams & Co., Belleville .... Silver medal.

Best Washboard, Illinois manufacture:
Premium to J. S. Crum, Chicago .... Silver medal.

Best twelve Brooms, Illinois manufacture:
Premium to Maston & Peck Bros., G. C. Smith, Agent, Du Quoin . ... Silver medal.

Best Churn, Illinois manufacture:
Premium to W. P. Emmert, Freeport .... Silver medal.

Best Portable Heater:
Premium to Cushing Heater Co., Chicago .... Silver medal.

Best Washing Machine:
Premium to D. J. True, Kankakee .... Silver medal.

Best Wringer:
Premium to Justus Smith, St. Louis ... . Silver medal.

Awarding Committee.—W. C. Brooks; N. C. Terrill; J. E. Garside; H. F. Aspinwall; Wm. G. Ross; T. L. Sexton.

LOT 43—MANUFACTURES OF VARIOUS KINDS.

Best display of Pottery Wares:
Premium to C. & W. Kirkpatrick, Anna .... Silver medal.

Best Carriage Harness:
Premium to Joseph Bastion, Murphysboro .... $10 and Silver medal.

Best Gentleman's Saddle:
Premium to A. D. Jackson, Benton .... Silver medal.

Best Lady's Saddle:
Premium to A. D. Jackson, Benton .... Silver medal.

Best specimen Roofing Material:
Premium to Chicago Elastic Stone Roofing Co .... Silver medal.

Best display of Surgical and Dental Instruments:
Premium to H. N. Durham, Du Quoin .... Silver medal.

Best Artificial Limbs:
Premium to Lewis Lockwood, St. Louis....................................Silver medal.

Best Fruit Crates and Packages:
Premium to Hadley & Crowder, Carbondale ....Silver medal.

Awarding Committee.—H. F. Gerauld, Vandalia; Jno. D. Cope, Salem; J. N. Strong, Ashley; Paul Frick, Jonesboro; Thomas Hobbs, Joliet.

CLASS F.—ENGINES, MACHINERY AND IMPLEMENTS.

SECTION 2.

GEORGE EDMUNDS, JR., *Superintendent.*

LOT 44—ENGINES AND MACHINERY.

Best Portable Farm Steam Engine:
Premium to Harrison & Co., Belleville............................$20 and Silver medal.

Best Garden Engine:
Premium to W. H. Hiner & Co., Fon du Lac, Wis..........................Silver medal.

Best Windmill and Pump for farm purposes:
Premium to Thos. C. Little & Co., Dixon............................$10 and Silver medal.

Best Pump for wells:
Premium to Sam'l Young, Jacksonville ....Silver medal.

Best Water Elevator other than Pump:
Premium to J. D. Tucker, East Paw Paw ....Silver medal.

Best Portable Grist Mill for farm use:
Premium to Porter & Mason, Ottawa..............................$10 and Silver medal.

Best Machine for opening Ditch for Tile:
Premium to Clark & Gleason, St. Louis ....$30 and Silver medal.

Best Machine for making open Ditch:
Premium to D. Harmon, Mattoon..................................$20 and Silver medal.

Best one hundred assorted Drain Tile:
Premium to Geo. Childs, Anna ....Silver medal.

Best Implement for cutting up Corn Stalks, etc., and other rubbish, lying on the field, into suitable lengths to be plowed under:
Premium to Princeton Manufacturing Co., Princeton ....$10 and Siver medal.

Best Horse Hay Fork:
Premium to A. J. Nellis, Pittsburgh. .... Silver medal.

Best Hay Pitching Machine:
Premium to Porter & Mason, Ottawa ....Silver medal.

Best Fanning Mill:
Premium to J. L. Runks, Nashville ....Silver medal.

Best Power Corn Sheller:
Premium to Joliet Manufacturing Co., Joliet ....Silver medal.

Best Hand Corn Sheller:
Premium to Sandwich Manufacturing Co., Sandwich.......................Silver medal.

Best Hay and Straw Cutter:	
Premium to Stewart & Needham, St. Louis	Silver medal.
Best Cattle Pump:	
Premium to Marsh Bros., Carbondale	Silver medal.
Best Stump Puller:	
Premium to Stewart & Needham	$10 and Silver medal.
Best Grub Puller:	
Premium to Stewart & Needham	$10 and Silver medal.
Best Road Making Machine and Grader:	
Premium to Prescott, Edwards & Co., Chicago	$20 and Silver medal.
Best Road Scraper:	
Premium to Decatur Agricultural Works, Decatur	Silver medal.
Best Steaming Apparatus for Cooking Food for Stock:	
Premium to H. N. Fezler, Anderson Universal Steamer, Kewanee	$10 and Silver medal.
Best Gate for Farm use:	
Premium to John Lee & Son, Du Quoin	Silver medal.
Best Portable Fence:	
Premium to A. C. Gilmore, Centralia	Silver medal.
Best Hay and Cattle Scales for farm use:	
Premium to H. H. Grover, Moline—Victor Scales	$10 and Silver medal.
Best Two-horse Wagon:	
Premium to Bub & Swarz, Belleville	$10 and Silver medal.
Best Spring Wagon:	
Premium to H. C. Williams & Co., Belleville	$5 and Silver medal.

Awarding Committee.—L. L. Haworth, Decatur; James Ogden, Nauvoo; Alexander Richardson, Fairfield; William J. Walker, Du Quoin; John C. Maxcy, Springfield.

CLASS G—FARM PRODUCTS.

D. T. Parker, *Superintendent.*

LOT 46—GRAIN AND SEEDS.

Best bushel White Winter Wheat:	
First premium to S. P. Hiller, Makanda	$10
Second premium to D. W. Leyerle, Anna	5
Best bushel Red Winter Wheat:	
First premium to Jacob W. Cruse, Jonesboro	10
Second premium to D. W. Leyerle, Anna	5
Best bushel Red Spring Wheat:	
First premium to Geo. T. Haskell, Rockford	10
Best bushel Rye:	
First premium to D. W. Leyerle, Anna	5
Second premium to Geo. T. Haskell, Rockford	3
Best bushel Oats:	
First premium to R. M. Wheatley, Du Quoin	5
Second premium to A. M. Fauley, Urbana	3

Best bushel Fall Barley:	
First premium to D. W. Leyerle, Anna	$5
Second premium to T. S. Elliott, Coulterville	3
Best bushel Spring Barley:	
First premium to Geo. T. Haskell, Rockford	5
Best bushel White Indian Corn, in the ear:	
First premium to Jeff L. Ury, Jonesboro	10
Second premium to D. W. Leyerle, Anna	5
Best bushel Yellow Indian Corn, in the ear:	
First premium to J. S. Stump, Moweaqua	10
Second premium to J. B. Phinney, Champaign	5
Best five or more stalks of Corn:	
First premium to D. W. Leyerle, Anna	2
Second premium to J. S. Stump, Moweaqua	1
Best bushel of Buckwheat:	
First premium to John Barringer, Anna	5
Second premium to Wm. Hutchinson, Benton	2
Best bushel Timothy Seed:	
First premium to D. W. Leyerle, Anna	5
Second premium to T. S. Elliott, Coulterville	2
Best bushel Clover Seed:	
First premium to D. W. Leyerle, Anna	5
Second premium to Geo. T. Haskell, Rockford	2
Best bushel Blue-grass Seed:	
First premium to Geo. T. Haskell, Rockford	5
Second premium to D. W. Leyerle, Anna	2
Best bushel Orchard Grass Seed:	
First premium to Geo. T. Haskell, Rockford	5

Awarding Committee.—H. B. Sherman, Kankakee; H. L. Halliday, Cairo; L. A. Kinney, Chebanse; T. F. Bouton, Jonesboro.

LOT 47—VEGETABLES.

Best bushel of early Irish Potatoes:	
First premium to Geo. T. Haskell, Rockford	$10
Second premium to John Kimmel, Jonesboro	4
Best bushel late Irish Potatoes:	
First premium to P. A. Marsh, Rockford	10
Second premium to W. H. Bowen, Dubois	2
Best bushel Sweet Potatoes:	
First premium to Tenbrock, Pierce & Co., Cobden	6
Second premium to A. Harmon, Anna	2
Best bushel Onions:	
First premium to Geo. T. Haskell, Rockford	4
Second premium to P. A. Marsh, Rockford	2
Best bushel Turnips:	
First premium to D. W. Leyerle, Anna	4
Second premium to George Cruz, Elkville	2

Best bushel Table Beets:	
First premium to Geo. T. Haskell, Rockford	$4
Second premium to D. W. Leyerle, Anna	2
Best bushel Mangle Wurzels:	
First premium to P. A. Marsh, Rockford	4
Best six heads of Cabbage:	
First premium to D. W. Leyerle, Anna	4
Best half bushel White Field Beans:	
First premium to M. L. Dunlap & Sons, Champaign	10
Second premium to John Kimmel, Jonesboro	4
Best peck Lima Beans:	
First premium to A. M. Fauley, Urbana	4
Best and greatest variety of Garden Peas—not less than one quart each:	
First premium to Geo. T. Haskell, Rockford	2
Best lot of Pumpkins:	
First premium to Allen Carr, Du Quoin	2
Best dozen of Water Melons, donated to Society:	
First premium to A. C. Stockwell, Du Quoin	10
Second premium to S. J. Davis, Du Quoin	4
Best dozen Musk Melons:	
First premium to Geo. T. Haskell, Rockford	5
Best bushel of Carrots:	
First premium to Geo. T. Haskell, Rockford	4
Best and greatest variety of Vegetables by one person:	
First premium to D. W. Leyerle, Anna	20
Best and greatest variety of Garden Seeds raised in Illinois—named:	
First premium to Geo. T. Haskell, Rockford	10
Best ten pounds of Tobacco, on the stalk:	
First premium to George Cruz, Elkville	10
Second premium to Hardy Cruz, Elkville	5
Best bushel Sugar Beets:	
First premium to A. M. Fauley, Urbana	10

Awarding Committee.—Bruno Gansel, Hyde Park; Jasper Messenger, Belleville; John Pierce, Cobden.

LOT 48—SWEEPSTAKES ON GRAIN, GRASS SEEDS AND VEGETABLES.

Best and largest collection of Farm Products, exhibited by one individual or by the Treasurer of any County Agricultural Society:	
First premium to D. W. Leyerle, Anna	$40
Second premium to P. A. Marsh, Rockford	20
Best and largest collection of Garden Products, exhibited by any one individual or by the Treasurer of any County Agricultural Society:	
First premium to Geo. T. Haskell, Rockford	40
Second premium to D. W. Leyerle, Anna	20

Awarding Committee.—Zarda Frost, Kinmundy; Enos Smith, Malden; Charles Fangenrath, Edwardsville; W. Fangenrath, Edwardsville; Daniel Worthington, Chicago.

LOT 49—FLOUR, BUTTER, CHEESE, ETC.

Best Barrel of Flour, exhibited by the manufacturer, with statement of the variety and quantity of wheat used to manufacture it:	
First premium to V. Beale & Bros., South Pass	$5
Second premium to E. & S. Fitzgerald, Benton	3
Best twenty pounds of Butter, made in May or June:	
First premium to C. S. Butler, Payson	10
Best ten pounds Fresh Butter, in roll:	
First premium to Mrs. L. Barnard, Decatur	10
Second premium to Mrs. H. S. Harr, Centralia	5
Best Cheese one year old or over:	
First premium to A. & W. D. Perry, Payson	10
Best Cured Cheese under one year old:	
First premium to A. & W. D. Perry, Payson	10
Best New Cheese:	
First premium to A. & W. D. Perry, Payson	10
Best lot of Honey not less than ten pounds, with written statement of hive and treatment of Bees:	
First premium to A. M. Fauley, Urbana	10
Second premium to A. B. Kennedy, Du Quoin	5
Best two Loaves Wheat Bread made with hop yeast:	
First premium to Charles Musson, South Pass	6
Second premium to Mrs. A. Davis, Du Quoin	4
Best two Loaves Wheat Bread made with milk raising:	
First premium to Mrs. A. Davis, Du Quoin	6
Second premium to Lucinda Irwin, Du Quoin	4
Best two Loaves of Bread made of unbolted flour:	
First premium to Miss Maggie Wilson, St. Johns	6
Second premium to Mrs. L. L. Haworth, Decatur	4
Best two Loaves of Rye Bread:	
First premium to Bruno Gansel, Hyde Park	6
Best Sponge Cake:	
First premium to Lilly Swanwick, Swanwick	4
Second premium to Mrs. L. L. Haworth	2
Best Snow Cake:	
First premium to Miss Mary L. Halstead, Decatur	4
Best Pound Cake:	
First premium to Miss Mary L. Halstead	4
Best Jelly Cake:	
First premium to Miss Mary L. Halstead	4
Second premium to Lucinda Irwin, Du Quoin	2
Best Fruit Cake:	
First premium to Lilly Swanwick, Swanwick	4
Second premium to Miss Mary L. Halstead, Decatur	2

Best Silver Cake:	
First premium to Miss Mary L. Halstead, Decatur	$4
Second premium to Mrs. J. Nearing, Waynesville	2
Best Gold Cake:	
First premium to Mrs. J. Nearing, Waynesville	4
Second premium to Miss Mary L. Halstead, Decatur	2
Best Nut Cake:	
First premium to Miss Mary L. Halstead, Decatur	4
Second premium to Miss Mary L. Halstead, Decatur	2
Best Doughnut:	
First premium to Mrs. J. Nearing, Waynesville	4
Second premium to Mrs. V. Barber, Decatur	2
Best Ginger Cake:	
First premium to Mrs. L. L. Haworth, Decatur	4
Second premium to Jennie Miller, Du Quoin	2
Best Quart Sorghum Molasses:	
First premium to D. B. Neal, St. Louis, Mo	3
Second premium to John Barringer, Anna	2

Awarding Committee.—John Pierce, Cobden; Mrs. D. B. Gillham, Alton; Mrs. Ella Parker, Amboy; Mrs Truman L. Pratt, Dixon; Mrs. E. Smith, Davenport, Iowa; Mrs. Horace Bradley, Davenport, Iowa; E. T. Pomeroy, Du Quoin,

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CLASS H—HORTICULTURE.

A. H. Dolton, *Superintendent.*

LOT 50—TREES AND APPLES.

Best display of Hardy Evergreens—a variety from Nursery:	
First premium from O. M. Coleman, Bloomington	$25
Second premium to F. K. Phœnix, Bloomington	15
Best collection of Apples—not less than 25 varieties:	
First premium to Ben. L. Wiley, Makanda	25
Second premium to J. M. Galbraith, Mt. Vernon	15
Best ten varieties of Apples for Southern Illinois:	
First premium to John S. Lawver, South Pass	20
Second premium to M. L. Dunlap & Sons, Champaign	10
Best ten varieties of Apples for Northern Illinois:	
First premium to C. H. Dolton, Dolton Station	20
Second premium to H. J. Dunlap, Champaign	10
Best Siberian Crab-Apples:	
Premium to M. L. Dunlap & Sons, Champaign	2
Best collection of Summer, Fall and Winter Apples, by farmer or amateur:	
First premium to H. J. Dunlap, Champaign	20
Second premium to J. M. Galbraith, Mt. Vernon	10

Awarding Committee.—T. A. E. Holcomb, South Pass; James M. Harris, Galena; D. Wilmot Scott, Galena; Bruno Gansel, Hyde Park; J. W. Fenton, South Pass.

LOT 51—PEARS, PLUMS, GRAPES, ETC.

Best collection of Peaches, by farmer or amateur:
First premium to J. M. Galbraith, Mt. Vernon $5
Second premium to C. S. Butler, Payson 3

Best collection of Pears, the product of this State:
First premium to M. L. Dunlap & Sons, Champaign 10

Best six Seedling Peaches:
Premium to Jackson Cook, Tamaroa 3

Best twelve specimens of Quinces:
First premium to V. K. Deyo, Makanda 3
Second premium to S. W. Maxcy, Mt. Vernon 2

Best collection of Native Cultivated Grapes, not less than six bunches of each variety:
First premium to A. H. Dolton, Dolton Station 15
Second premium to M. L. Dunlap & Sons, Champaign 10

Best Early Grapes, not less than six bunches each:
First premium to A. H. Dolton, Dolton Station 6

Best three varieties of late Grapes for table use, not less than three bunches of each:
First premium to M. L. Dunlap & Sons, Champaign 6
Second premium to W. N. Harp, Du Quoin 3

Best three varieties of Wine Grapes, not less than six bunches each:
First premium to M. L. Dunlap & Sons, Champaign 6

Best collection of Fruits by a Horticultural Society:
Albert Dunlap, for Champaign County Horticultural Society ....Silver Medal and 20

Awarding Committee.—T. A. E. Holcomb, South Pass; James M. Harris, Galena; D. Wilmot Scott, Galena; J. W. Fenton, South Pass; Bruno Gansel, Hyde Park.

LOT 52—CANNED AND PRESERVED FRUITS, JELLIES AND PICKLES.

Best Crab-Apple Preserves:
Premium to F. N. Phipps, Benton $2

Best Crab-Apple Jelly:
Premium to Katie Smith, Du Quoin 2

Best Plum Jelly:
Premium to E. Onstott, Du Quoin 2

Best Quince Jelly:
Premium to Mrs. L. L. Haworth, Decatur 2

Best Apple Jelly:
Premium to Mrs. L. L. Haworth, Decatur 2

Best Grape Jelly:
Premium to Lucinda Irwin, Du Quoin 2

Best Peach Jelly:
Premium to W. N. Harp, Du Quoin 2

Best display of Canned Peaches, in cans or glass, put up in 1870:
First premium to W. N. Harp, Du Quoin 5
Second premium to Betty Miller, Du Quoin 3

Best display of Cherries:
First premium to Mrs. E. Lipe, Du Quoin $4
Second premium to Mrs. W. S. D. Smith, Pinckneyville 2

Best display of Gooseberries, 1871:
Premium to Mrs. H. S. Harr, Centralia 4

Best display of Raspberries, 1871:
Premium to W. N. Harp, Du Quoin 2

Best display of Fresh Fruits, in cans or glass, samples distinct from the foregoing:
Premium to John R. Elstun, Du Quoin 8

Best canned Tomatoes:
First premium to John R. Elstun, Du Quoin 4
Second premium to F. N. Phipps, Benton 2

Best preserved Apples:
Premium to F. N. Phipps, Benton 2

Best preserved Pears:
Premium to F. N. Phipps, Benton 2

Best Peach Butter:
Premium to Mrs. L. L. Haworth, Decatur 2

Best Apple Butter:
Premium to F. N. Phipps, Benton 2

Best Cherry Jam:
Premium to F. N. Phipps, Benton 2

Best Sour Pickled Cucumbers:
First premium to F. N. Phipps, Benton 3
Second premium to Nancy L. Foster, Pinckneyville 2

Best Pickled Mangoes:
Premium to F. N. Phipps, Benton 2

Best Pickled Grapes:
Premium to Mary L. Halstead, Decatur 3

Best Pickled Water Melon:
First premium to Mary L. Halstead, Decatur 3
Second premium to Mary L. Halstead, Decatur 2

Best Pickled Gherkins:
Premium to Mary L. Halstead, Decatur 3

Best Sweet Pickled Cucumbers:
Premium to Mary L. Halstead, Decatur 3

Best Pickled Cabbage:
First premium to Mary L. Halstead, Decatur 3
Second premium to Nancy L. Foster, Pinckneyville 2

Best Cucumber Catsup:
Premium to Mary L. Halstead, Decatur 3

Best Tomato Catsup:
Premium to Mrs. J. Nearing, Waynesville 3

Best browned pound of Coffee;
Premium to Mrs. A. Davis, Du Quoin 2

Best Walnut Catsup:
Premium to Mrs. T. J. Bingham, Du Quoin $1

Awarding Committee.—E. P. Pomeroy, Du Quoin; Mrs. T. A. E. Holcomb, South Pass; Mrs. L. H. Colver, Salem; Mrs. M. A. Kennedy, Muncie, Ind.

LOT 53—FLOWERS AND PLANTS.

Best display of Gladiolii, in bloom:
First premium to F. K. Phœnix, Bloomington $8
Second premium to F. K. Phœnix, Bloomington 4

Best and greatest variety of Dahlias, named, and in bloom:
First premium to Michel Brothers & Kern, St. Louis, Mo 10
Second premium to F. K. Phœnix, Bloomington 5

Best twelve Dahlias, dissimilar blooms:
Premium to Michel Brothers & Kern, St. Louis, Mo 6

Best pyramid of Dahlias:
First premium to Michel Brothers & Kern, St. Louis, Mo 10
Second premium to F. K. Phœnix, Bloomington 6

Best pyramid of Mixed Flowers:
Premium to F. K. Phœnix, Bloomington 5

Best display of Everlasting Flowers:
Premium to Mrs. W. M. Beatty, Jacksonville 5

Best display of Foliaged Plants:
First premium to F. K. Phœnix, Bloomington 10
Second premium to W. N. Harp, Du Quoin 5

Best and greatest variety of Cut Roses:
Premium to F. K. Phœnix, Bloomington 10

Best and greatest variety of Noisette, Bourbon and Bengal Roses:
Premium to F. K. Phœnix, Bloomington 5

Best twelve named Roses:
Premium to F. K. Phœnix, Bloomington 4

Best and greatest variety of Verbenas in bloom:
Premium to F. K. Phœnix, Bloomington 6

Awarding Committee.—E. P. Pomeroy, Du Quoin; Mrs. T. A. E. Holcomb, South Pass; Mrs. L. H. Colver, Salem; Mrs. M. A. Kennedy, Muncie, Ind.

LOT 54—FLORAL DESIGNS, BOUQUETS, ETC.

Best and greatest variety of Cut Flowers, named:
Premium to F. K. Phœnix, Bloomington $10

Best and most tastefully arranged Cut Flowers, without name:
Premium to F. K. Phœnix, Bloomington 3

Best and most tastefully arranged pair Flat Bouquets:
Premium to F. K. Phœnix, Bloomington 5

Best and most tastefully arranged pair of Round Bouquets:
Premium to F. K. Phœnix, Bloomington 5

Best Winter Flower-Basket of Dried Flowers and Mosses:
Premium to Mrs. J. W. Clements, Du Quoin 2

Best Single Hand Bouquets:

Premium to F. K. Phœnix, Bloomington $5

Awarding Committee.—E. P. Pomeroy, Du Quoin; Mrs. T. A. E. Holcomb, South Pass; Mrs. L. H. Colver, Salem; Mrs. M. A. Kennedy, Muncie, Ind.

CLASS I.—FINE ARTS.

A. H. Dolton, *Superintendent.*

LOT 55—MUSICAL INSTRUMENTS.

Best Reed Organ:

Premium to St. Louis Piano Manufacturing Company .... Silver medal.

Best Square Piano:

Premium to St. Louis Piano Manufacturing Company .... Silver medal.

Awarding Committee.—J. B. Turner, Jacksonville; A. C. Hillman, Irvington; D. Wilmot Scott, Galena; George S. Haskell, Rockford.

LOT 56—SCULPTURE, PAINTING, DRAWING, ETC.

Best specimen of Sculpture:

Premium to John Hayden, Carbondale .... Silver medal.

Best Cattle-piece in Oil:

Premium to E. H. Dewey, Canton .... Silver medal.

Best Lithography:

Premium to J. W. McClure, Chicago .... Silver medal.

Best specimen of Fruit Painting in Water Colors:

Premium to F. K. Phœnix, Bloomington .... Silver medal.

Best specimen Flower Painting in Water Colors:

Premium to Lilly Swanwick, Swanwick .... Silver medal.

Best collection of Stereoscopic Views:

Premium to Giles B. Roe, Paine's Point .... Silver medal.

Best Pencil Drawing:

Premium to Lilly Swanwick, Swanwick .... Silver medal.

Best Pencil Drawing by girl under fifteen years:

Premium to Nannie Swanwick, Swanwick .... Silver medal.

Best Ambrotype:

Premium to E. Wheatley, Du Quoin .... Silver medal.

Best Oil Colored Photographs:

Premium to E. S. Wheatly, Du Quoin .... Silver medal.

Awarding Committee.—E. P. Pomeroy, Du Quoin; Mrs. T. A. E. Holcomb, South Pass; Mrs. L. H. Colver, Salem; Mrs. M. A. Kennedy, Muncie, Ind.

CLASS K—TEXTILE FABRICS AND SEWING AND KNITTING MACHINES.

C. W. WEBSTER, *Superintendent.*

LOT 57—MILL FABRICS, ILLINOIS MANUFACTURE.

Best piece of Coarse Linen, ten yards:

Premium to Mrs. J. Nearing, Waynesville....$10 and Silver medal.

Best display of Manufactured Silk:

Premium to Mrs. J. Nearing, Waynesville....$10 and Silver medal.

Best sample Raw Silk:

Premium to Mrs. J. Nearing, Waynesville....$5 and Silver medal.

Best display of Cordage:

Premium to Jas. H. McConnell, Springfield....$10 and Silver medal.

Awarding Committee.—James M. Harris, Galena; M. C. Kell, Centralia; Mrs. Charles Bradley, Decatur; Mrs. G. W. Bradley, Benton; Miss V. A. Casey, Benton.

LOT 58—HOUSEHOLD FABRICS, ILLINOIS MANUFACTURE (ALL WOOL).

Best ten yards all wool Flannel:

First premium to Mrs. C. Miller, Anna....$10

Best pair all wool Blankets:

First premium to Mrs. C. Miller, Anna.... 10
Second premium to Mrs. J. Nearing, Waynesville.... 5

Best display of Yarns:

First premium to Mrs. J. Nearing, Waynesville.... 5
Second premium to Mrs. C. Miller, Anna.... 3

Best pair of Men's Socks:

First premium to Mrs. M. E. Scott, Du Quoin.... 5
Second premium to Mrs. B. Mills, Atlanta.... 3

Best pair of Ladies' Stockings:

First premium to Mrs. M. E. Scott, Du Quoin.... 5

Best pair of Mittens:

First premium to Mrs. L. L. Haworth, Decatur.... 5
Second premium to Mrs. R. H. Merrill, Decatur.... 3

Best Coverlet, (wool and cotton):

First premium to Mrs. E. Lipe, Du Quoin.... 5
Second premium to Mrs. M. McElvain, Du Quoin.... 3

Best piece Jeans, ten yards:

First premium to Mrs. J. Nearing, Waynesville.... 10
Second premium to D. W. Leyerle, Anna.... 5

Best ten yards Plain Linsey:

First premium to Mrs. C. Miller, Anna.... 5
Second premium to Venus A. Nearing, Waynesville.... 3

Best ten yards Plaid Linsey:

Premium to Mrs. J. Nearing, Waynesville....$10 and Silver medal.

Best Carpet:

Premium to Mrs. C. Miller, Anna....$5 and Silver medal.

Best Rag Carpet:

First premium to Mrs. Nancy McElvain, Du Quoin	$5 and Silver medal.
Second premium to Mrs. S. Adams, Du Quoin	$3

Best display of Linen Goods:

Premium to Mrs. J. Nearing, Waynesville	10

Best Flax Sewing Thread:

Premium to Mrs. J. Nearing, Waynesville	5

Best specimen prepared Flax, for spinning thread:

Premium to Mrs. C. Miller, Anna	5

Best specimen Flax Thread, for weaving into fine Linen:

Premium to Mrs. C. Miller, Anna	5

Best display of Ladies' and Gent's Boots and Shoes:

Premium to C. F. Liekman, Du Quoin	Silver medal.

Best Cotton Sewing Thread, spun by the exhibiter:

Premium to Mrs. J. Nearing, Anna	5

Awarding Committee.—Mrs. Wilson Marion, Du Quoin; Mrs. Jesse A. Deere, Mt. Vernon; Mrs. A. D. Jackson, Benton; Mrs. Smith Johns, Benton; Mrs. Wm. Dudley, Du Quoin.

LOT 59—NEEDLE, SHELL AND WAX WORK.

Best plain Knitting:

First premium to Mrs. B. Mills, Atlanta	$5
Second premium to Mrs. J. Nearing, Waynesville	3

Best plain Sewing, the samples to embrace the different stitches used in household sewing and repairing:

First premium to Lucinda Irwin, Du Quoin	5
Second premium to Mrs. W. R. Merrill, Decatur	3
Third premium to Mrs. Dr. Vance, Rockwood	2

Same, by child under twelve years of age:

First premium to Mrs. J. Nearing, Waynesville	5
Second premium to Mrs. S. J. Ross, Du Quoin	3

Best Tidy, by child under twelve years of age:

First premium to Mrs. J. Nearing, Waynesville	5
Second premium to Hattie J. Ward, Du Quoin	3
Third premium to Laura C. Ewing, Du Quoin	2

Best worked Collar, by child under twelve years of age:

Premium to Mrs. J. Nearing, Waynesville	5

Best sample Crochet work:

First premium to Mrs. J. Nearing, Waynesville	5
Second premium to Miss Alice Lipe, Du Quoin	3
Third premium to Mrs. A. J. Jones, Du Quoin	2

Best sample Knitting work:

First premium to Mrs. W. R. Merrill, Decatur	5
Second premium to Miss Maggie Wilson, St. John	3
Third premium to Mrs. W. M. Beatty, Jacksonville	2

Best and most tastefully executed Patch-work Quilt:

First premium to M. G. Hadley, Carbondale	5
Second premium to Mrs. M. Robinson, Chicago	3
Third premium to Mollie Brassnell, Anna	2

Same, by child under twelve years of age:	
First premium to Dr. S. M. Woodside, Pinckneyville	$5
Second premium to Philip Kimmel, Elkville	3
Third premium to Nelly McKelvey, Coulterville	2
Best white Domestic Coverlet:	
First premium to Mrs. C. Miller, Anna	5
Second premium to Miss Mary Fulton, Sparta	3
Third premium to Mrs. W. Lipe, Du Quoin	2
Best Silk Quilt, not before exhibited:	
First premium to Mrs. M. E. Abernethy, Centralia	5
Best Lace-work or Hem-stitching:	
First premium to Mrs Wm. R. Merrill, Decatur	5
Second premium to Lucinda Irwin, Du Quoin	3
Third premium to Lucinda Irwin, Du Quoin	2
Best Transferred Embroidery:	
Premium to Mrs. W. M. Beatty, Jacksonville	2
Best specimen Landscape Embroidery:	
Premium to Mrs. W. R. Merrill, Decatur	5
Best Worsted Embroidery:	
First premium to Mrs. Mary E. Wheeler, Tamaroa	5
Second premium to Mrs. W R. Merrill, Decatur	3
Third premium to Mrs. Laura C. Ewing, Chicago	2
Best Needle-worked or Floss Embroidery:	
First premium to Mrs. L. L Haworth, Decatur	5
Second premium to Mrs. J. Nearing, Waynesville	3
Third premium to E. N. Clark, South Pass	2
Best Silk Embroidery:	
First premium to Mrs. L. B. Smith, Springfield	5
Second premium to Mrs. Henry Nunes, Du Quoin	3
Third premium to Mrs W. R Merrill, Decatur	2
Best sample of work in Wax:	
First premium to Mrs. A. L. Haywood, Du Quoin	2
Second premium to Mrs. B. D. Vandruver, Du Quoin	1
Best sample of work in Feathers:	
First premium to Mrs. T. L. Pratt, Dixon	2
Second premium to Mary E. Hall, De Soto	1
Best sample of work in Hair:	
First premium to Wiley Grey, Elkville	2
Second premium to Mrs. J. C. Monk, Du Quoin	1
Best Shell-work:	
First premium to Mrs. Dr. Vance, Rockwood	5
Second premium to Mrs. H. H. Taylor, Du Quoin	3
Best Ladies' Knit Silk Hose:	
Premium to Mrs. J. Nearing, Waynesville	2
Best piece of fancy Netting:	
Premium to Mrs. J. Nearing, Waynesville	1

Awarding Committee.—James M. Harris, Galena; M. C. Kell, Centralia; Mrs. Charles Bradley, Decatur; Mrs. G. W. Bradley, Benton; Miss V. A. Casey, Benton.

CLASS L—NATURAL HISTORY.

A. H. DOLTON, *Superintendent.*

LOT 61—BOTANY, GEOLOGY AND ZOOLOGY.

Collection illustrating the Botany of Illinois:	
First premium to Dr. George Vasey, Normal	$25
Second premium to Prof. G. H. French, Irvington	10
Collection in Mineralogy:	
First premium to Prof. G. H. French, Irvington	25
Second premium to Dr. S. M. Woodside, Pinckneyville	10
Collection of Fossils:	
First premium to Prof. G. H. French, Irvington	20
Collection of Illinois Birds:	
First premium to Henry Faulkiner, Du Quoin	25
Second premium to John Bulmer, St. John's	10
Collection of Illinois Shells:	
First premium to Dr. George Vasey, Normal	25
Collection of the Woods of Illinois:	
First premium to Dr. George Vasey, Normal	20
Collection of Dried Plants, named:	
First premium to Prof. G. H. French, Irvington	6
Second premium to Dr. George Vasey, Normal	4

Awarding Committee.—J. B. Turner, Jacksonville; D. Wilmot Scott, Galena; Geo. L. Haskell, Rockford; A. C. Hillman, Nashville.

MISCELLANEOUS AWARDS

MADE AT THE JANUARY MEETING, 1872, ON ARTICLES ENTERED AS MISCELLANEOUS, AT THE FAIR HELD AT DU QUOIN, 1871.

CLASS E—POULTRY.

LOT No. 39.

Pair Blue Turkeys:	
Joseph I. Loose, Springfield	Commended.
Trio Partridge Cochins:	
Joseph I. Loose, Springfield	Highly Commended.
Collection of Rabbits:	
Josephus Vancil, Du Quoin	Silver medal.

CLASS F—MECHANIC ARTS.

LOT No. 41.

Self-acting Engine and Fire Extinguisher:
Babcock Fire Extinguisher Company, Chicago ....Silver medal.

Stove Pipe Thimble and Ventilator:
Lawrence & Miller, Du Quoin....................... ....Highest Commendation.

Assortment of Cut Nails:
Belleville Nail Co., Belleville ....Silver medal.

LOT No. 42.

Hand Corn Planter:
Hugh & Dyer, Fort Scott, Kan........ ....Highest Commendation.

Single or Double-seated Buggy—top or open:
Taylor & Bradley, Decatur ....Silver medal.

Set Buggy Wheels:
Woodburn Wheel Co., A. Bybee, Agent, St. Louis, Mo...........Highest Commendation.

Improvement in Wagon or Carriage Wheels:
J. B. Stuart, Du Quoin ....Highly Commended.

LOT No. 43.

Display of Boots:
C. M. Henderson & Co., Chicago ....Highest Commendation.

Glycerine Soap:
John R. Elstun, Du Quoin...Commended.

Queensware, Illinois manufacture:
C. & W. Kirkpatrick, Anna.......................................Silver medal.

Half Barrel:
Master A. Houks, De Soto ....Highest Commendation.

LOT No. 44.

Back-Lash Spring:
J. L. Post, Ashley ....Highly Commended.

Head Block for Saw Mill:
A. J. Blakesley, Du Quoin...................................Highest Commendation.

Steam Jet Pump:
A. McCreary, Du Quoin ....Silver medal.

Check Rower for Corn Planter:
Haworth & Son, Decatur ....Highly Commended.

Metallic Head Block for Carriage:
J. C. Bates, Sparta ....Highly Commended.

CLASS G—FARM PRODUCTS.

LOT No. 47.

VEGETABLES.

Castor Beans:
T. S. Elliot, Coulterville ....Highest Commendation.

CLASS H—HORTICULTURE.

LOT No. 50.

TREES AND APPLES.

Best Apples for Northern and Central Illinois, not in general cultivation (Stanard):
M. L. Dunlap & Sons, Champaign..........................Highest Commendation.

Dried Fruits:
Alden Fruit Preserving Co., Anna..........................Highest Commendation.

CLASS K—TEXTILE FABRICS.

LOT No. 57.

Indian Mallow Fiber:
James H. McConnell, Springfield..................... ....Silver medal.

[NOTE.—The Committee to examine and pass upon Lot 57, made a written report on the new fiber introduced by Mr. McConnell. This report will be found following the list of awards at Winter Meeting.—SECRETARY.]

LOT No. 58.

Carpet Warp:
Graham & Co., Rockford..................................Highest Commendation.

LOT No. 59.

Rag Work Rug and Mat:
Miss Alice O. Farmer, Belleville................ ....Silver medal.

WINTER MEETING OF EXECUTIVE BOARD.

JANUARY, 1872.

PREMIUMS AWARDED.

ESSAYS.

For the best Essay on the Preparation and Cultivation of a Fruit Farm in Illinois, based on the experience of the author:
W. C. Flagg, Moro $25

For the best Essay on the Cultivation and Preservation of Vegetable and Garden Seeds, based on the experience of the author:
J. B. Root, Rockford $25

For the best Essay on the Cultivation of Flax, and manufactures therefrom:
James H. McConnell, Springfield $25

For the best Essay on Manufactures in Illinois, facilities and necessity for their establishment, with their relations to the Agriculture and Commerce of the State:
James T. Dwyer, Springfield $25

For the best Essay on the Planting and Cultivation of Forest Trees:
H. J. Dunlap, Champaign $25

For the best Essay on the Principles and Plans of Landscape Gardening, as adapted to beautifying the homes of the Farmers of Illinois:
W. C. Flagg, Moro $25

For the best Essay on the Manufacture of Soap:
J. T. Dwyer, Springfield $20

VINEGAR.

For best sample of Vinegar:
W. S. Lamb, Freeport .... Silver medal.

WINES.

For best sample Catawba Wine, vintage of 1870:
G. Morlot, Basco .... Silver medal.

For best sample Concord Wine, vintage of 1870:
G. Morlot, Basco .... Silver medal.

For best sample Clinton Wine, vintage of 1871:
G. Morlot, Basco .... Silver medal.

For best sample Herbemont Wine, vintage of 1871:
G. Morlot, Basco .... Silver medal.

For best sample Norton Wine:
H. Funk, Bloomington .... Silver medal.

CIDER.

For best sample of Cider:

G. W. Hilliard, Brighton	Silver medal.

GREEN FRUITS.

For best six varieties Winter Apples, with statement as to quality of fruit and characteristics of trees, by one individual or firm:

First premium to Seneca Wood, Springfield	$10
Second premium to Seneca Wood, Springfield	5

For best collection of Apples, shown by County Society:

Adams County Horticultural Society—T. Butterworth, Secretary, Quincy	Silver medal.

INDIAN MALLOW—(*Abutilon Avicennæ.*)

REPORT OF SPECIAL COMMITTEE AT STATE FAIR, 1871.

The undersigned, appointed as a special Committee to examine the fabrics manufactured from the Indian Mallow, or "Stamp-weed," or "Button weed," so common and pestilent in all our corn-fields, patented and exhibited at the State Fair at Du Quoin, by Jas. H. McConnell, of Springfield, Ills., beg leave to report as follows:

That they have examined the fiber as exhibited on the stalk, and as dressed for use, in its various colors and qualities, and as made into thread, cordage and ropes, and consider that its promise of permanent utility is indeed quite flattering. We have no doubt but that this detestable weed will be found far more valuable in future, in our rope-walks, than it has heretofore proven in our corn-fields.

We are informed, by Mr. McConnell, that it will, with the same ground, and same care, yield from fifty to one hundred per cent. more than hemp; that the ground should be plowed deeply in the fall, and lightly in the spring, and seed sown at the rate of from twelve quarts to sixteen quarts to the acre, in the spring, in good corn-planting time, in the same manner as hemp; that a swath three feet wide can be cut with a common reaper, or a wider swath with McCormick's Hemp Reaper; that it should be shocked the same as hemp, in the field, till cured, and the first crop water-rotted the same as hemp; after this a second volunteer crop will spring up the last of July, which may be cut and dew-rotted in October. The plants will grow from nine to fourteen feet high. The seed is separated the same as hemp. The cost of cutting, per acre, is reported to be 75 cents; the cost of water-rotting, $10; the cost of dew-rotting, $5; the cost of hand cleaning, $12; the cost of cleaning with machinery less than half of that, while the cost of a good machine need not exceed $100 in Philadelphia.

This would bring the actual cost of the fiber, beside rent for land, at from $19 to $31 per ton.

The Messrs. McConnell are offering to contract for the fiber at $100 per ton for all they can get of water-rotted and of good quality, and $75 for dew-rotted. But hemp of the same quality is worth from $250 to $400, which leaves them a bonus of from 100 to 300 per cent. on their patent. The crop is said not to exhaust the land, if the refuse is restored to it. The fabrics exhibited were certainly of very fine quality and strength, both in the fiber and the cordage. It receives all sorts of colors, and retains them, it is said, nearly as well as wool. It is, therefore, of great value as a warp for carpets, rugs, and cloths requiring color. It loses fifty per cent. less than hemp, and is of a texture and appearance equal to the best Russia hemp, and said to be of about the same strength as Manilla in cordage. But your Committee are, of course, responsible for none of these statements, except for the appearance of the fabrics presented to their inspection. They only report them as presented to them, though they see no reason to call these very favorable and flattering statements in question, and hope that Illinois and the great Northwest may yet find, in this hitherto most common and noxious weed, a plant of great profit to their people, and of great utility to their race; and surely every enterprise for developing such utilities deserves the encouragement of our social aid, until its fate can be fully and finally settled.

Respectfully submitted.

J. B. TURNER,
Jacksonville, Ill.
EDWIN SMITH,
Davenport, Iowa.
S. V. R. HICKCOX,
Chicago, Ill.

PREMIUM ESSAYS.

WINTER MEETING, JANUARY, 1872.

PREPARATION AND MANAGEMENT OF A FRUIT FARM IN ILLINOIS.

By W. C. FLAGG, Moro.

The first consideration in the establishment of a fruit farm is accessibility to market. It is desirable, for the best success in selling the products, to have not only a profitable market, accessible by rail, or market for distant shipments, but a local market, where small lots of fruit, ripe fruit, and the various odds and ends and waste of a fruit farm, may be sold at remunerative if not profitable prices. The more of these markets, of course, the better; but there should be one at least. In this respect the Alton fruit-growers are well situated, being close to a large local market at St. Louis, a small local market at Alton, and in direct communication with Chicago, the great fruit market of the Northwest.

A second and important consideration is the particular site of the fruit farm itself. Taking all fruits into consideration, we find that in most respects the best fruit soils of Illinois are on the bluffs of our great rivers. The loess or bluff formation there furnishes a warm, dry soil, not, perhaps, quite as strong as could be wished, but well adapted to giving the best flavor to fruits. In certain cases we find a warm, rich, black soil quite successful in growing large and fair fruits; though these are generally, I believe, not of superior flavor. The fruit farm should be protected from frosts, by elevation, proximity of large bodies of water, or both, so as not to suffer from the rapid changes of a continental climate.

A soil adapted to the growth of forest trees is, in many respects, the best for fruit growing. This is simply, I presume, from its being a less peaty soil, and probably warmer and drier, from having been longer above water, in some cases, and from being composed of more pervious material in others.

There is some, though not a very great, difference in the wants of different species of fruits. The Blackberry, Raspberry, Currant and Gooseberry require richer soils for their best development than the Apple and Peach; the Quince wants a moister and heavier soil than the Pear. But, as a rule, the best soil for one of our fruits will be pretty well adapted for all.

Having selected a proper site for a fruit farm, some general considerations of its best mode of management should next receive our attention: important among which is the extent to which a fruit farm should be—that, and nothing more. Some have limited their culture, not only to fruits, but often to one or two kinds of fruits; and generally with disastrous results. The majority of farmers, fruit-growers or others, generally succeed the best by what is called mixed farming. The fruit farmer can raise cheap pork in his apple and peach orchards, and should keep swine. Often he will find a flock of sheep the best scavengers in clearing off a crop of weeds in an orchard. And taking into view the diversities of the different varieties and species of fruit in their time of ripening, the different seasons at which they require culture, training, and in escaping the malign influences of unfavorable seasons, we may very safely say that a fruit grower had better plant more or less of most of the fruits successful in his locality. I do not mean by this that he should plant many varieties of standard fruits, but that he should have all the few that experience and observation have proved to be in all respects the worthiest, thus:

Of Grapes, the Concord.

Of Peaches, Hale's Early, Troth's Early, Large Early York, Oldmixon Free, Stump-the-World, Smock and Heath.

Of Plums, the Chickasaw in its varieties.

Of Cherries, the Early Richmond.

Of Strawberries, Willson's Albany.

Of Raspberries, Philadelphia and McCormick.

Of Blackberries, the Kittatinny and Lawton.

Of Pears, the Doyenne d'Eté, Bloodgood, Bartlett, Seckel, Duchesse d'Angouleme, Buffum, Beurre d'Anjou.

Of Apples, Sops of Wine, Carolina Red June, Primate, Hawthornden, Porter, Maiden's Blush, Jonathan, Smith's Cider, Ben Davis, Winesap, Rawles' Janet, Willow Twig, Gilpin.

Of Quinces, Orange.

Of Gooseberries, Houghton's Seedling.

Of Currants, Cherry and Red Dutch.

For all these fruits deep preparation of the soil, if not indispensable, is at least very valuable. As in other cases of planting, however, the ground should not only be deeply stirred, but afterwards thoroughly compacted by harrow, roller and clod crusher, so that it may hold moisture and "dry out" less readily.

The best times for planting are early in the fall—that is, as soon as the leaves have fallen—and early in the spring. The tree or plant should thus be well established before the winter's dry cold or summer's drought, as the case may be, comes on. Both of these are quite injurious to the newly planted tree.

Looking to speedy returns, the Strawberry should occupy an important place in the newly planted fruit farm, and the other small fruits are desirable. At the same time it is desirable to have the later fruiting species under way as soon as possible, that no time may be lost in their growth. So that, if means permit, a pretty general planting of all the fruits should be made at once; but if not, the small fruits had better begin the work.

It would be difficult to assign, according to any general rule, the amount of land that should be planted, in gross or in detail, with fruits. Starting on a basis of forty acres, however, I will endeavor to enumerate the number of acres I would plant with the different fruits, looking to convenience in marketing and in the care of the plants. On high priced lands, near cities, one would plant more small fruits, and on low priced and remote lands, more winter apples:

3 acres	Strawberries,	1 acre	Cherries,
1 "	Raspberries,	1 "	Plums,
2 "	Blackberries,	5 "	Peaches,
1 "	Currants,	5 "	Pears,
1 "	Gooseberries,	15 "	Apples,
2 "	Grapes,	1 "	Quinces.

I have found, however, that in the case of small fruits, especially of Strawberries, it may often be the best economy not to give them separate ground, but to plant them in orchard spaces, pending the orchard's growth. The culture, of course, cannot be so perfect, nor the yield so great in this case, as a rule; yet I have found Strawberries to often thrive and bear better under a moderate amount of shade. The same is specially true of Currants, and perhaps of other small fruits.

In selecting plants for fruit plantations, I would prefer those of the following ages and description:

STRAWBERRIES.—Runners of last year.

RASPBERRIES.—Last year's suckers, tips, or plants from root cuttings.

BLACKBERRIES.—Last year's sprouts, or plants from root-cuttings.

CURRANTS.—Yearling plants, or two years old, from cuttings.

GOOSEBERRIES.—The same.

GRAPES.—Plants from last year's cuttings.

CHERRIES.—Buds of one or two years, on Mahaleb stock. Morello stocks are better in some respects.

PLUMS.—Perhaps root grafts of one or two years are as desirable as any for the Chickasaw varieties.

PEACHES.—Buds of one season's growth.

PEARS.—Buds of one or two years, on Pear stocks. A few varieties may be preferable on the Quince stock, though I doubt it. There are Duchesse D'Angouleme, particularly, and, perhaps, Louise Bonne de Jersey, Easter Buerre, and one or two others.

APPLES.—Root grafts on long roots, at the age of two or three years. There is much prejudice against root-grafting, but the facts, as far as I can get at them, show that root-grafts grow and live as well as any.

QUINCES.—Cuttings of two or three years old.

Special attention should be given to the *forms* of trees selected for planting. They should not be of special vigor, though they should not be weak: but they ought, by all means, to have a good shape. The ideal tree should have a single, straight stem, surrounded by horizontal branches, or strong buds that will furnish them. Trees of this shape are stronger, will probably be longer-lived, and will hold and ripen their fruit better in a hot and windy country.

The planting and management of the different fruit plantations naturally separate into Orchard, Vineyard and Small Fruit plantations.

ORCHARDS.

In the Orchard, my later practice is to plant all fruit trees at the uniform distance of one rod apart. The advantage of one uniform distance is easily understood by any one who has attempted the cultivation of unevenly planted trees. If the distance seem somewhat close for some varieties and species, it is to be remembered that orchards may remain closely planted during the earlier years of their bearing, and be afterwards thinned as their needs may require. By taking out one-half of the trees, diagonally, in the apple orchard, for instance, the remainder will be left at a distance of about twenty-three feet; and by taking out, some years later, one-half of what are left, one quarter of the original number will be left standing thirty-three feet apart. Peach trees and pear trees may sometimes be too closely planted at one rod; but generally a little shortening in will remedy the evil, while the mutual protection afforded by the trees is very valuable in frosty and in windy weather.

Planting in squares or oblong blocks, so as to bring all the trees of the same variety in a compact body, is very convenient for special culture, which some varieties need, and for convenience in gathering and packing the fruit. It is convenient to plant in squares of one hundred trees, when that many, or more, are wanted of a given variety.

Laying off the ground for planting may be done in a great variety of ways, by means of the plow, the line, stakes, etc., and I need not stop to detail the various methods. For rapidity, the plow is most to be commended: for accuracy, the line and pole, used as described by Thomas, in his Fruit Culturist, page 55.

Trees and plants should be planted in deeply plowed and well pulverized ground; and it is better if this preparation extend over the whole surface of the field. A few deeply plowed furrows under the line of each row, will, however, serve a good purpose. The ground being thus prepared, a hole, large enough to receive the roots of the tree readily, is easily dug, and the fine earth can be thrown in and packed closely about the roots. This close packing of the soil requires a good deal of attention in the coarser and looser soils, and less in the finer and closer soils. I notice, as a consequence, I presume, that our Northern Illinois fruit growers recommend tramping the soil about the roots of a tree, while our Southern Illinois planters seem to attach little importance to the practice.

The pruning a tree should receive at planting is another vexed question. So far as possible the tree should receive its general shape by cutting out such limbs as threaten to interfere with the symmetry of the tree. The top and roots should be equalized, so that if a tree have plenty of roots its top may remain nearly intact; whilst if the roots are scanty, a good deal of the top should be shortened in.

One or two exceptions may be made to this general rule of pruning. The Peach tree should have all its limbs pruned off so as to leave only a single straight stem of the trunk, which should be cut off at the uppermost strong bud. The Cherry and Plum are, perhaps, best left to their own devices, and not pruned at all.

It is an advantage to protect the trees by two stakes each, driven so as to ward off the single-tree of the plow in cultivating the trees. If the rows of the orchard run north and south, east and west, the stakes may be driven on the south-west and north-east of the tree, so as to protect the tree in plowing in either direction. Even with care a good many trees are permanently injured where they are not thus protected, and the additional expense of the stakes is amply remunerated by the better condition of the trees.

The best common crop to grow in an orchard during its early years is Corn. The amount of culture the corn receives, and the shade it affords, are both favorable to the young trees. Root crops do not answer so well, because the digging of them in the autumn sometimes excites late growth in the trees. Strawberries, after the orchard is well established, may be grown between the rows; and other small fruits, though at the risk of their being in the way.

Clean culture about the root of the tree is an essential point as the best preventive against borers of all kinds. Where the sunlight comes strongly, and the chances for concealment and moist bark to operate upon, are less, the borer does not seem to do much mischief.

Washes of various kinds tend to promote the health of the bark and destroy fungoid growths: and some of them to prevent the attacks of the apple-tree borer. Common whitewash—better still, with an addition of salt and ashes—will answer a good purpose, and is easily, rapidly and *obviously* applied. Soap and water, or other alkaline wash, is good. Mr. Saunders, of the Experimental Gardens at Washington, recommends the following wash for pear trees: Take one peck of fresh, unslacked lime, and four pounds of flour of sulphur, and slack with hot water, and to each gallon of this white-wash add one ounce of pure carbolic acid in solution, as purchased at the druggist's. This is thought to be a preventive, to a certain extent, of blight. I have known common oil paints to be applied to the young and smooth trunks of apple trees with good results in keeping the bark smooth, and apparently shielding it from the invasion of mosses, and probably other cryptogamic growths.

In plowing an orchard, except where the natural drainage is good, or tiles have been laid, it is best, by continually plowing *to* the trees, to lay out the orchard into ridges, on the crown of each of which a row of trees shall stand. This makes good surface drainage at all times of the year.

Pruning, all things considered, is best done near the end of winter, as nearly as may be, after the coldest weather is passed and before the sap grows thin with coming warm weather. This most avoids the effect of cold on the amputated limbs; but to make all safe, and for early pruning, it is better to paint or otherwise cover all wounds thus made. I assume in all this that the best time for pruning is that when the tree is in a state of rest, and not when in process of growth. This is specially true of the cutting off of large limbs, whose removal, when in full leaf, would give a great shock to the vitality of the tree.

Orchard trees begin to bear at from three to six years from planting, and this brings in new considerations of thinning, packing, marketing, and otherwise disposing of the fruit. Arrangements should be made, not only for packing and marketing, but for the utilization of waste, the working up of unsaleable products, when prices are low, and the like. The Cherry may generally best be packed in quart Strawberry boxes, and shipped in crates. Plums may be packed in the same way, or in peach boxes or baskets made a little closer than ordinary. The Peaches for long distances had better be packed in one-third bushel peach boxes; for shorter distances the Peach basket is desirable, because it bruises the fruit less and shows it better. Pears and Quinces may be put up in the same kind of packages as Peaches. Half barrels are recommended in the Eastern States, but they have not been much tried in the West. Apples, if early and handsome, generally sell best in small packages of one-third of a bushel to a bushel. Later in the season barrels are better. These are neater if made with flat hoops. In gathering and packing, it will generally be found best to exclude all small specimens of fruit, as well as those that are not fair and smooth. Decaying fruit should never be admitted, nor that which will probably begin to decay before coming into the hands of the consumer. This sometimes requires that the fruit should be picked when so green that it will not mature well; but this is the better extreme of the two. Care should be taken to retain unbroken the stems of most fruits, especially of the Pear, Apple, or other long-keeping sorts, and of the Cherry, which, like the Strawberry, should be gathered by the stem without touching the fruit.

In packing fruit, care should be taken to make the package uniform throughout, so that the fruit exposed or first seen may be the same in quality and appearance as the rest. Care should be given, also, in the selection of packages, that they be clean, neatly made, smooth and uniform in appearance; also to pack closely, so that there may be no loosening and bruising of the fruit in transportation.

Waste and over-ripe fruit may be disposed of in various ways. Apples may be fed to hogs, with good economy, where the swine are turned into the orchard to pick up the wind-falls. Hogs will thrive and attain a good degree of fatness upon an apple diet. A month's feeding of corn will then fit them for butchering. Cider and vinegar may also be made from defective apples; but, in most places, the prices will not make this much, if any, more profitable than feeding to pigs. Hogs also pick up the waste of a peach orchard well; and the Peaches too ripe to pick in times of low prices may be canned profitably. Pears may be canned also.

VINEYARDS.

Taking the Concord as the standard Grape, a half rod each way, or 640 vines to the acre, is a good distance at which to plant them. They should be cut down to one or two eyes at planting, and encouraged to grow one strong cane the first year; cut down to two or three eyes the second; and made to grow one strong cane for the third year, which may be permitted to bear fruit. Short temporary stakes will answer the first and second years; but by the spring of the third year these should be replaced by long stakes or a trellis. *Early* pinching of shoots that must be stopped, so as not to shock the vitality of the vine by removing a large amount of foliage at once; very thorough stirring of the surface, and laying the vines on the ground, in winter, and perhaps covering them, seem to be the three cardinal points in Grape culture.

The simplest mode of training is to wind the bearing shoot around a stake of good hight and tie it strongly, and grow from it the fruit laterals which, by the winding, distribute themselves around the stake so as to properly dispose of the fruit. The wood for next year's fruiting can be trained to the same stake, or, if the bearing canes are strong or numerous, to a separate stake.

A great variety of packages for Grapes are now used; and I do not know which can be placed first. The simple five pound box, packed, half a dozen each, in a crate, has given me good satisfaction. Perhaps for the lowest markets a larger box or drawer is better, and for near markets cutting the Grapes directly into Peach baskets. It is always desirable to handle the Grapes as little as possible, so as not to rub off the bloom, which is one of the most attractive characteristics of some varieties of Grapes.

Grape vines should be planted in blocks of say 25 x 25=625 vines, or about an acre in a square. Between these leaving a double width, or one rod between squares, will give abundant opportunity for wagons to pass, teams and horses to turn, etc.

SMALL FRUITS.

Strawberries are best planted in the spring, in rows three to four feet apart, with the plants about a foot apart in the row. The plants should have most of the leaves and the larger roots cut off with the scissors, and should have the dirt firmly pressed down about them when planted, which should be as early as possible in the season, that they may be well rooted before the dry weather sets in. It is quite essential that the ground should be well compacted where the Strawberry plants stand: they dry out and freeze out worse in a loose and well aerated soil. I have not tried the experiment, but I suspect that in loose soils the use of the roller, before or after planting, would be found useful. Clean culture, and a careful keeping loose of the surface soil, the summer through, will enable the plants to make runners enough to cover a continuous strip of twelve to eighteen inches wide in each row. These strips should be covered by a winter mulch of straw, which in the early spring should be removed and placed between the rows, with enough coarse manure to pretty well cover the spaces; thus moisture and nourishment will be furnished during the bearing season. The future of the plantation will depend on a good many considerations not easily foreseen. It may be found that the plants die with exhaustion, after bearing; or some other contingency may arise that will make it preferable to plow up and plant anew. On the other hand, a favorable year of moisture, after fruiting, may show the second year's crop better than the first, and the third greater than the second. I have a plantation five or six years old, parts of which still grow fine fruit, with two *runnings* annually, one after picking and one in the fall. The mulch thus made has preserved and continued them in good condition.

The Strawberry should be carefully picked. One should not touch any part of the fruit except the stem, and should be specially careful not to break down the fruit and leaf stalks, nor rumple the leaves of the plant, that must ripen successive pickings of fruit.

For packing I prefer the cases containing, each, twenty-four square quart boxes, two tiers deep, of twelve boxes each; and this also for the other small fruits, excepting, sometimes, the Raspberry, which may ship better, when soft, in pint boxes, and Gooseberries and Currants, which are sometimes better in larger packages.

Raspberries are variously planted. My preferences are in favor of planting this, with the other small fruits, in rows, pretty wide apart between rows, and pretty thick in the rows. Rows six feet apart, and plants three feet apart, are at good distances for Raspberries. Raspberries are not so profitable as other small fruits, in many years, but can hardly be entirely disregarded, as they form a succession to the Strawberry, and are a delicious fruit.

The Currant and Gooseberry may be planted at about the same distances as the Raspberry. Though discarded by some as unprofitable, I regard both as desirable, to a certain extent. They will bring a fair price, either green or ripe, in most seasons, and occasionally are in great demand. They will bear a good deal of fair fruit under neglect, and with proper pruning, culture and manure, will do wonders. In the case of the Currant, the dry and hot summers must be met with good surface culture, shade or mulch, as protection.

The Blackberry, with due culture, manuring and pruning, is wonderfully productive, and its fruit is unsurpassed. It is best grown in hedge rows, about eight feet apart. This and the Raspberry must be cleared of the bearing wood at the end of the season, or in the subsequent winter, and it needs heavy manuring for good results. This and the Raspberry also require, for good development, a pinching in of the young canes when at a proper hight (four to five feet), for next year's fruiting. Care must be observed not to do this too soon, as new growths, that do not mature well, are apt to be excited.

All the small fruits are valuable for home use, and when the market is glutted may be changed into various forms. Wine may be made from all of them; jellies from all; and all can be canned; and they may be disposed of in that shape. Some care must be exercised, however, in making an article which will go upon the market in competition with those made by professional establishments. The new beginner is apt to work in expensive ways, and to add too much sugar to manufactures of this character.

I have thus spoken briefly of all the more common fruits, and given some hints as to their management. But I believe I should conclude by warning the enthusiastic beginner in fruit-growing that this pursuit, no more than many others, is the road to fortune. In fruit-growing, economy, perseverence and foresight are, as elsewhere, essential to success; and whilst I believe wealth awaits the careful horticulturist, yet here, as everywhere else in the race of life, we find more failures than successes.

CULTIVATION AND PREPARATION OF VEGETABLE AND GARDEN SEEDS.

By J. B. ROOT, Rockford.

It is not so many years but that it is in the recollection of living men that not one-tenth of the garden seeds sold in this country were American grown, while amateurs and private growers only sought to grow those most common and easily grown. This was due to the general belief that garden seeds not only could not be grown profitably here, but also that they were not as good as seeds of European growth. The adoption of specialties has become a marked feature in our Agriculture and Horticulture; and the one requiring, perhaps, the most of patient study, application and experiment, and also producing the most striking results, is seed growing. American enterprise, ambitious and restless, pushing into every avenue in search of wealth and independence, has made this the subject of years of application, until now nine-tenths of our garden seeds are grown in this country, not always because they can be grown as cheaply, but more especially because they have proved to be far better. Men soon learned that animals removed from their native land to one of greater rigors or extremes must become acclimated, often requiring several generations. Later they learned it to be equally true of trees and plants; but it was a long time before American gardeners became convinced that seeds of plants grown in the moist and equable climate of Europe, and especially of England, had habits of growth that quite unfitted them to withstand our hot and dry summers. Tending to delay Americans from learning this, was the fact that the first generation, or saving, of seed from foreign stock rarely ever equaled its parent, but it took two or three generations for it to become acclimated; but now so well is this matter understood, that no large gardener will accept as a gift seeds of any variety (with three or four exceptions), unless he knows their parent stock, for several generations, has been grown in as severe and trying a climate as that in which he expects to plant. Many a crop of Turnips with long necks and small bottoms, Cabbages with long legs, bushy heads and dead leaves, Lettuce seeding without heading, tell the tale of their foreign nativity, until seeds of many varieties, marked "Imported" or "English," are quoted at half the price of American, and find a slow sale at that.

If this be true of American as compared with European seeds, it is equally true of Western as compared with Eastern grown seeds. The extreme dryness of our summers is very trying on the growth of seeds raised elsewhere. Moreover, our rich soil, the use of labor-saving implements, cheapness of foreign labor, and the dryness of our climate for perfecting and curing seeds, offer facilities equaled in few parts of the world for seed growing. Several large Eastern dealers have already availed themselves of these, and have established seed farms in our State, until we probably grow more garden seeds than all the other Western States together. Therefore, since this promises to become, though not a great, yet an important, industry among us, it may be well, while making it the main purpose to give directions to amateur and private growers, to also give such hints or general ideas of commercial seed growing as space may allow. Of course, on a subject so multifarious, little more than general principles can be given.

First, and most important, is the selection of seed stock. The careful and experienced seed grower, who has to begin the business anew, goes to work carefully and cautiously to procure the best of each kind; for are not vegetables, equally with cattle, swine or poultry, subject to the laws of inheritance?—so that there are not only different kinds of the same vegetable, but also different strains of the same kind, possessing certain qualities and excellencies capable of perpetuation from generation to generation; just as there is the Short-horn variety of cattle, and the Duchess, and the Booth, and other strains of the same breed. In fact, vegetables are more fully subject to the law of inheritance than cattle, and possess this disadvantage: that while cattle bear upon them the marks and proofs of their purity and value, the seeds of vegetables, upon their face, are all the same—their excellencies being intrinsic and dependent on the integrity of the grower. Hence the large demand and certain excellence of seeds of old growers is due to the fact that they not only procure the best strains to be procured, but have also, for many years, been constantly improving them.

No department of Horticulture promises greater returns and rewards for patient labor than the improvement of varieties of vegetables. Begin with the best that can be had, and make them better. True, there is a limit to this improvement, but no vegetable of our acquaintance has yet attained it. That this pays every grower, needs no argument to prove. If, by care in selection, a vegetable may be brought to grow even one-fourth larger than the crop of your neighbor or competitor, on similar soil, the profit of the course is evident. If the growth be twice as large, which is more usually the case, it is still more evident.

A certain standard or model should be adopted, and then, by selection and high culture, seek it. What this should be for each of the different vegetables, and how best attained, will be specified more particularly when treating of each vegetable separately.

Next in importance is *purity*. For of standard sorts each variety pure (save in exceptional cases) is more valuable to the private grower than a hybrid or sport, while for a commercial grower it is cheaper, in the end, to throw away impure seed than to sell it to either dealer or planter. This mixture or hybridizing occurs when the pollen of one flower finds lodgment on another of a different variety. Hence, the greatest liability is among those vegetables which abound in pollen and have prominent blossoms. Chief among these is the *Cucurbitaceous*, or Vine family, and particularly the Squash and the Melon. Whether the pollen is carried most by bees or winds, we need not discuss—for it is certainly carried by both, if, indeed, Mr. Darwin or some other observer may not yet prove that the pollen of the male bloom has an affinity or attraction toward the female or bearing blossom. Certain it is that, in the Squash for instance, nature manages pretty unfailingly to carry the pollen from the long stemmed conspicuous male to the short stemmed and more modest female blossom.

Whatever may be the process or the means, it is a fact worth knowing, that if a high tight fence stand between two varieties, even of Squashes, the per cent. of mixture is very small.

Of this, the Vine family, it is not safe to grow different varieties of the same species, or an allied species, within several hundred feet of each other. This is equally true of Cabbages and Turnips. With allied species, as Musk-melons and Cucumbers, Cabbages and Turnips, it is often claimed no mixture occurs; but it certainly is true that the seed of these, when grown near together, produce an unusual number of sports and abnormal growths. While a less distance is safe, yet we always seek, on our own seed farm, to keep allied sorts a half mile apart. Corn demands as great or greater distance to be safe. Beets, Carrots, Onions, Celery and Lettuce are safe at a much less distance, and Bush Beans, Peas, Parsnips and Tomatoes have very little susceptibility to admixture, and are safe at a few feet apart.

In securing and retaining purity of seed stock, it is very important to attend most carefully to the culling and rejecting from every seed crop all sports and hybrids, and ill-formed specimens. With unprincipled commercial growers this often is not done, because such specimens are usually the heaviest seeders, and give this quality to the growth from their seeds, so that if allowed to continue a few generations they certainly run out the purer and better portion of the stock.

Earliness is a quality often sought in a large class of vegetables, and, by care and attention, it can be greatly increased and developed. For this purpose only the earliest ripe specimens of the earliest crop should be selected, and in no case should the crop be grown out of season. For instance, in seeking earliness in Lettuce or in Cucumbers, they should be planted as early in spring as the season will allow, and not wait until any convenient time, as is done by many large growers, knowing the crop will mature before frost, at any rate. Seed grown on sandy soil will prove earlier than that from a heavy one. A sandy soil, too, generally matures seed more perfectly than any other, and if enriched is generally the best soil for such purposes; but no universal rule can be laid down, and perhaps we can impart most information by briefly treating each vegetable separately, in alphabetical order.

BEANS.—Seek a thrifty crop, and in no case save as seed the scattered pods left from a crop used for table. Sort over and pick out all imperfect seed.

BEET.—For Long Blood, select dark color, small red leaves, and cylindrical rather than tapering form, for beets of such form yield more, pull easier, and waste less in use. For Blood Turnip, the same leaves and color, but the turnip shape. Bassano should be of rose-red color, green leaves and turnip shape. Carefully cull out all white roots. Seek to correct the habit, constantly breaking out in this beet, to have several little tufts or crowns of leaves instead of one. In all of the beets seek small tap roots. In any of the newer sorts select according to the introducer's claims, or such standard as promises best.

In the northern part of the State, in burying roots of all kinds, it is found best to bury or cover with alternate layers of soil and coarse manure or litter, six inches or a foot in thickness, until there is a foot and a half to two feet of covering, gradually added from time of pitting, in early November, till the middle of December. If stored in the cellar, some soil should be mixed through the pile, and then all covered with soil nearly dry, to keep out the air and prevent shriveling and drying up. In spring, set out early, in deep rich soil, and if the best seed is desired, break off all seed stalks but the main one from the center of the crown, and throw the whole strength into that one.

The seed does not ripen evenly, but when the earliest are ripe the whole stalk may be cut, and after curing a few days all is ready to thresh, which is very rapidly done with a flail. A bushel of large roots yields much more seed than a bushel of small ones; and, in fact, this is true of all the root crops. Beet seed in this climate is liable to blast in unfavorable seasons, and since it is good for several years, careful gardeners keep a two-years' supply on hand.

In growing a quantity we usually open a deep furrow in a rich soil, and in the bottom run a subsoil plow, to loosen up so deeply that the Beet can be pressed into the yielding soil and stand against one side of the furrow, then cover with hoes, light plow or two-horse cultivator. Give clean cultivation, and at each working hill up slightly. Never store Beet seed in quantity till well cured and dried.

CABBAGE.—Select large hard *heads* on short stumps, with few loose leaves. In England, where Cabbage is said to be grown largely for stock feeding, and a soft bushy head can be used, it may be, as is claimed, economical to grow seed from headless stumps; but it is a costly experience here to attempt to grow Cabbage from any other than the largest, hardest and best heads. Cabbages stored in cellars are in danger of losing their vitality and store of sustenance, from drying up; and stored out of doors in pits, only the greatest caution will protect from danger of frost. The former can be avoided by storing in soil nearly dry, and the latter by successive coverings of soil and litter, or coarse manure, as for roots. If the frost once reaches the heart of the head or stalk (which may be known by its being water-cored), it is useless for seed purposes, though not spoiled for use or market. In pits, always store with roots down and heads up, nip off all but the main center stalk, and as soon as the seed pods turn purple, cut, and cure thinly spread over a tight floor or cloth; for as soon as ripe the pods begin to split and scatter seed. With little help it threshes itself. To grow good Cabbage seed involves great labor and care; but far better incur this than use cheap foreign seed, which will rarely (and invariably in a dry season) produce half as many good heads as good American-grown seed.

CAULIFLOWER seed is very difficult to raise in this country, since it almost invariably blasts in the blossom, so that we are compelled to use foreign seed.

CARROTS.—For Long Orange seek bright orange color, small neck, with few leaves, and cylindrical, smooth shape, with small top-root. The long carrots generally are too long for their thickness, and can be improved by selecting such as retain their thickness further toward the bottom. They should be stored, set out, and treated same as beets, except that the seed ripens unevenly, and must be gone over several times, cutting only fully ripe heads each time.

CELERY.--Select good-shaped bunches of even growth, store in soil in the cellar, and treat same as carrots.

CORN.—Though Sweet Corn is grown in nearly every garden, and is supposed to be easily saved, yet of no other garden product is so much poor seed sold as of this. With high cultivation get a thrifty crop, and then when the milk of the kernel begins to thicken, the best ears should be picked, braided together and hung up in a dry place to cure. If cut up and put into the shock, or if left on the stalk to cure, and then stored in any quantity, it is sure to spoil. Even when spread out thinly on the floor it often moulds on the under side. Do not shell till wanted for use, or it may, if in quantity, heat and spoil.

CUCUMBER.—Only the best shaped specimens should be saved. If earliness be sought, save only the first ripened ones; but if a prolific habit is to be encouraged, then pick the earlier ones and allow to ripen only the later ones, from the extremities of the vines. But in such case pains should always be taken to pick and throw away, while small, all nubbins and ill-shaped specimens, and thus put the whole strength of the vines into good ones. The seed acquires greater vitality and cleans nicer if allowed to stand until dead ripe—so ripe as to be nearly, but not quite, soft. The cucumbers are then split in two, lengthwise, and the seed and pulp removed, with wooden or iron pads or spoons, after which the seeds are allowed to stand three days, when the seed is washed by pouring them, with water added, from one vessel into another, when the good seeds settle to the bottom, and the pulp and light seed float off. They are then thinly spread and dried till "as dry as a bone," else it is unsafe to store them in any quantity. In commercial growing we use the same principles, but facilitate the process by the use of water-power, and a combination of sieves similar to a fanning mill, under water.

A few seeds may be washed very nicely, without fermentation, by rubbing and working them in pure white sand and then washing them in several waters. The sand must be free from dirt, or the seeds will have a dull, dirty look. If it be perfectly clean the seeds will come out very white and nice.

EGG PLANT.—Peel and slice the fruit, and then squeeze the seed from each piece separately, into a tub of water, and then pour from one vessel to another, as with cucumbers. Never allow them to ferment in the least, or they will sprout and spoil. Likewise they must be dried rapidly, for if allowed to stand over night with the surface of the seed still soft, it is sure to sprout. Probably half the seed of this fruit sold throughout the country is poor from this cause.

Kohl Rabi.—See Turnip.

Lettuce.—Select seed from plants that remain the longest without running to seed. When so ripe as to shell out, cut, and gather upon stout sheets, and thresh with a flail, and clean by winnowing on a breezy day or with the fan.

Melons.—Select such specimens as possess the qualities you wish to perpetuate, clean and treat same as cucumber seed, except they need to stand only 24 to 36 hours.

Onions.—Select only the best bulbs for seed. Set them in furrows three feet apart, four inches deep, and six inches apart in the furrows. Cover lightly, and at each hoeing hill up a little until the stalks are covered up to the swell. This aids in time of drouth, and also prevents the stalk from breaking up under the weight of the seed head, and from lodging in a wind. When a few of the seed vessels of any head begin to crack open, it should be cut with a few inches of the stalk, and spread in an airy place, not more than four inches deep, and stirred several times a day. If a large quantity is grown, it is best to spread on lattice work or lath work, raised a few inches above a tight floor, so the air can circulate readily through it. In three or four weeks, when thoroughly cured, it can be stored away till convenient to thresh and clean, which is easily done with flail and fan. Sometimes the fan will not clean perfectly. In that case sink in water and pour off the chaff with the water, and dry thoroughly the good clean seed which sinks to the bottom.

Parsnip.—Select the best roots and treat same as beets. By growing very large roots, and setting them two feet by three, a much larger yield will be obtained than from the same amount of small roots set close.

Peas—Are always buggy in this climate, if sown early. They are less infested if sown late in the season, but yield lightly, and are subject to mildew if any cold rains occur in August and September. Hence most of our seed peas are grown in Canada.

Pepper.—Dry the peppers by hanging on strings in a dry place, and remove seeds at your leisure; or if seed is removed earlier, do it while holding the pepper under water, to protect the eyes.

Radish.—Sow early, so as to let the seed ripen during the heat of midsummer. Cull out all sprouts and mongrels, saving seed only from thrifty, well-shaped roots. Do not cut the stalks until the seed pods are thoroughly ripe and dry, else they dry down upon the seed and threshing becomes a slow business. Seed saved from radishes grown from English seed will, the first year, produce poor roots, but by the second and third savings it will become acclimated and produce the finest roots. Hence, see to it, always, that your seed has for several generations been American-grown.

SQUASH.—Be sure to plant the different varieties a long way apart, to avoid intermixture. Summer Squash seed should be treated quite the same as cucumber seed, but Winter Squashes yield more and better seed if stored till mid-winter, when they are fully matured, and, like a winter apple, become ready for use. The seeds often increase in weight one-fifth after storage.

SPINACH.—See Lettuce.

TOMATO.—Grow plants early in the hot-bed, with room enough to be strong and stocky. Transplant at least twice before removing to the field. Plant on good ground, and select for seed only the earliest and best fruit, and then clean in the manner described for cucumbers, except they do not need to ferment more than one day, at most.

TURNIPS.—Store the roots in the manner recommended for beets; save seed as advised for cabbages. In no case save seed from a long-necked or thick, bushy-topped specimen. If you do not grow your own, be sure you get American instead of English seed, though its cost be twice as much.

Thus we have sought to briefly give some of the directions we deem most important to secure pure seeds; and while we do not advise any one to grow his own seed, if he can get them of a *reliable* grower, yet he had better, by far, grow his own, though it be at five times the expense, rather than use such seed as often is sold by irresponsible dealers, both English and American.

The best seed is worth many times its cost. Poor seed, if used, is very costly, even as a gift.

CULTIVATION OF FLAX, AND MANUFACTURES THEREFROM.

BY J. H. McCONNELL, SPRINGFIELD.

Of all the various commodities susceptible of textile adaptation, there is no single product of greater importance than Flax. Its fiber, in strength, beauty, and durability, so far surpasses cotton as to be indispensable for certain uses, in defiance of all competition. As a crop, it has always been held in high estimation in the Old World, where it has received royal patronage, and has always been a source of wealth, and of comparative independence, to those who have encouraged its growth.

No field crop, perhaps, requires such constant and careful attention, and in turn, no crop more clearly indicates, or more richly rewards the increased care bestowed upon it.

Flax is grown both for its fiber and its seed. It is grown on a variety of soils, but can only be brought to its fullest perfection in a rich, deep, and moderately moist soil, containing much vegetable matter in its composition. Good corn lands generally will grow excellent flax.

Whatever land is selected, should be deeply plowed and harrowed, and rolled repeatedly, until a very fine tilth is reached. Plowing should take place as early in the spring as the complete departure of frosts will permit, and the seed should be sown immediately after. Harrow the seed in well; and it is advisable to go over the land again with a light roller, in order to secure an evenness of vegetation. The quantity of seed sown must depend upon the object you have in cultivating the plant. If for its fiber, sow evenly about two bushels of seed to the acre. If you desire to raise seed, one-half bushel to the acre will be sufficient. Much care should be taken to select good seed, as the entire success of the crop will depend materially upon this point. Seed proper for cultivation are bright, smooth and very slippery, and plump and heavy enough to sink in water. The interior of the seed, when broken open, should present a yellowish-green appearance, and taste sweet and oily. A good warm rain, soon after the seed have been sown, will secure a good "stand" of flax, and a handsome yield may generally be relied upon.

In order that the flax plants may thrive to the best advantage, it is necessary that the field be clear of weeds, and in order to secure this end, good clean land should always be selected for a flax field. Land which has grown corn the season previous is recommended. If such land is chosen, and is well prepared in the spring, few or no weeds will make their appearance; but if any do, they ought to be promptly extirpated.

If the foregoing plan has been carefully pursued, you will soon have a crop of flax, which must be harvested by some means or other. Formerly all flax was pulled, but the present scarcity of labor, and the prices which labor at present commands, render this practice, as applied to large crops, unprofitable, if not in fact impossible.

When seed is made the object of cultivation, the crop can be most economically and expeditiously harvested with an ordinary reaping machine; but when the fiber alone is desired, this method of harvesting is very unsatisfactory, as no machine has yet been constructed which can cut the stalks so low as to avoid wasting a very considerable portion of the plant. Yet, notwithstanding this waste, we must still rely upon the machines. We can better afford to make up this waste by raising more flax, rather than to employ so much manual labor as would be requisite to pull our crops.

If the finest fiber is sought after, the crop should be harvested as soon as the blossoms have fallen off. The plants should be bound in small bundles, and immediately submitted to the water-rotting process. If you contemplate dew-rotting the plants, allow them to stand until nearly ripe. As soon as they are cut down, bind the plants in small bundles, and place them in shocks of convenient size, to cure. When sufficiently cured, stack them well, and allow them to remain until the season for dew-rotting arrives, which is about the middle of October. If the seed is desired, allow the crop to stand until ripe, and then treat it substantially in the same manner as oats.

The introduction of effective machinery for cleaning out the fiber, and improved machines for threshing out the seed, greatly facilitate the preparation of flax crops, and dispense with the laborious methods of a few years ago. Ten bushels of seed, and 600 pounds of fiber, are good average crops, but frequently as many as twenty bushels of seed, per acre, are grown on the fertile lands of Illinois.

To say that Flax is a profitable crop would be a random statement, and probably not universally true; but as an instance of the successful and profitable growth of Flax in Illinois, during this last season, I would state that farmers of Champaign county sold their Flax straw at a price which paid all the expenses of raising the crop, and had left for profit from ten to fifteen bushels of seed per acre, which they sold at $2 50 per bushel.

The fluctuations in the seed and fiber markets render Flax-growing a somewhat precarious business, and many farmers cling to the opinion that Flax-growing is not usually profitable, unless the straw is in demand at good prices.

From the seed of the Flax-plant we have the linseed-oil of commerce, and the refuse called oil-cake, so useful in the feeding economy of the farm. It is very nutritious, and can be advantageously fed to all kinds of live-stock.

Linen is the principal fabric manufactured from flax-fiber. It comes to us from abroad under various names, such as Irish, Scotch, English, etc. Of linen goods, there are various grades and qualities. We have "drill," which is twilled linen, and is used chiefly for pantaloons, and then there are linen goods called "cambric," which are exceedingly fine, and possess a beautiful silk-like appearance. Flax is also extensively introduced into certain classes of woolen goods, in order to impart an increased brilliancy to their texture.

The finer grades of fiber are susceptible of the finest adaptations. From it we have those costly foreign laces, and articles which are as delicate as the imagination can conceive of, or skilled workmanship execute. So fine indeed can this fibre be worked, that it has been estimated that a single pound of manufactured flax has been sold for many thousands of dollars.

Very little fine flax-fiber is at present produced in our country, and in fact this interest has so signally subsided that it no longer receives a mention in the general statistics of the Agricultural Department.

It is a source of much surprise to foreigners that in a country so extensive as ours, with a soil so varied, and with a climate so well adapted to its growth, that the production of fine flax-fiber should be all but entirely neglected, and that with a people so enterprising and energetic, we have scarcely made an attempt to introduce the linen manufacture into this country. To-day, as twenty years ago, Great Britain, France and Belgium supply us with everything in the line of linen goods. Our flax manufacturers are at present confined, for the most part, to a few thread manufacturing establishments, and our flax mills, which offer a fair market for our raw flax-straw. From this straw is obtained an inferior article of fiber, which is converted into baling-rope, bagging, and a good article of paper.

The great draw-back to the increased production of flax-fiber, at present, as heretofore, is the immense amount of labor required to prepare good fiber. Many attempts have been made to prepare, directly from the unrotted straw, "Flax Cotton," which can be readily spun on cotton machinery. Claussen, no doubt, has made the nearest approach to success. But those who fondly hoped that his efforts might be crowned with success, were doomed to disappointment, for, at best, he only succeeded in obtaining a nearly worthless article, and his whole experiment was substantially á failure.

We often read startling accounts of marvellous successes in the manufacture of "Flax Cotton." We silently rejoice, and anxiously await substantial proof of this success, in the shape of mills, which will create a demand for our rough straw.

But this proof never comes, and we awake to the uncomfortable realization of having been "humbugged."

Yet, until such machines are introduced, flax-fiber growing can hardly assume proportions of any magnitude in our country.

Our farmers cannot afford to waste their time in competing with the penny-paid laborers of the European despotisms.

When approved machinery is introduced, which will do for flax all that Eli Whitney's Cotton-Gin has done for cotton, then the farmers of Illinois stand ready to furnish flax in undreamed-of quantities, sufficient, if necessary, to carpet Great Britain and all the flax-growing districts which border on the "Rhine," or line the shores of the "Zuyder Zee."

MANUFACTURES IN ILLINOIS;

Facilities and Necessity for their Establishment, with their Relation to the Agriculture and Commerce of the State.

By JAMES T. DWYER, Springfield.

At the Winter meeting of this Society, held in the year 1868, my views on the Manufacturing interests of the State of Illinois, and their relative connection with her Commerce and Agriculture, were presented in the form of an Essay, which was accepted by the Executive Board, and was subsequently published in the seventh volume of the Transactions of the Society.

Since that time the State of Illinois has taken great and unlooked-for strides in her manufactures. Many new industries have been successfully introduced, some of them being of a novel and unlooked-for character.

Very few of our manufacturing establishments have failed in being profitable; and when they have not been profitable, the causes of failure can be readily traced to some radical defect in the machinery and management, or to the want of sufficient capital, and not to overstocked markets, falling prices, or outside or home competition—the usual sources of embarrassment surrounding manufacturing bodies.

Our people are becoming slowly convinced of the great fact which other communities have practically illustrated, in the prosperity flowing from diversified home industries: that the farm and the furnace, the workshop and the factory, the railroad and the water craft, must exist within sight of each other, and are as necessary to the prosperity of each other as are the bricks, mortar and materials in the erection of our buildings.

The most fertile agricultural soils will soon become exhausted by continued grazing and cropping, and have to be renewed with manures, at great cost and labor, to enable them to keep up the supplies for the population who are non-producers of food. The mere plowing and stirring the soil is not agriculture. Farm lands must be fed as well as worked, and this essential food must be paid for out of the profits realized from the sales of its products made to artizans, miners, and those engaged in moving the crops to the seaboard or on the ocean, or purchased out of the profits realized abroad from the manufactured products of our factories, rolling mills and work shops, and imported and sold to those bordering on the seaboard, to be applied to their exhausted farm lands.

The past four years have not been such as to give much encouragement to manufacturing enterprise. The year 1868 was one of much political excitement and commercial embarrassment; the cotton and corn crops of 1869 were not very abundant, and a sudden and unlooked-for depression in the values of most of our leading agricultural products followed; during 1870 and in 1871, "vials of wrath" have been poured out on us, in the shape of drouth, floods and fires—there having been more destruction of valuable property and crops from those causes, during this year, than has ever taken place in any country, from any causes, since the commencement of this century.

In addition to these natural causes, it cannot be denied that there is a general distrust prevailing, amongst our manufacturing capitalists, on the uncertainty of our national legislation—the fear of the free admission of iron and its kindred products deterring them from running the risk of losing their capital by a certain and ruinous decline in our manufactured irons, when placed in competition with the iron produced by the cheaper labor of Europe. The same cause influences the opening and working of deposits of iron ore and coal, and, by thus retarding those immense interests, depriving us of an industrious mechanical population, without which no country can prosper. Capital has also been wanting, it being more to the interest of capitalists to hold United States bonds, stock in National Banks, well-secured mortgages, and, until the Chicago conflagration burst the bubble, stock in Insurance Companies. It is, however, apparent that the financial affairs of the country are rapidly assuming a healthy condition; and now that the United States government is paying off the national debt in large installments, no doubt the dead and misapplied capital that has been locked up in National Banks and Government securities will be soon liberated, and investments made in those great manufacturing undertakings without which a nation must be helpless and inferior amongst the commercial nations of the earth. But, notwithstanding all real or imaginary difficulties, the manufacturing progress of our State has been such as to justify the belief that all those projects which have been conducted with skill and judgment, backed up with capital, have been or will be a complete success, and that, in the future, capital, skill, science and enterprise will seek our fertile State in the full confidence of meeting with reasonable prosperity in all their undertakings.

The State of Illinois has peculiar facilities for manufacturing, which are gradually and certainly developing themselves. In the Northern part of the State there exists an immense supply of water-power—the State itself controlling on the Illinois River, and on the Canal connecting the Illinois River with Chicago, water sufficient to grind into flour from fourteen to twenty thousand barrels daily, which power, if applied to cotton manufacturing, would give work to several thousand operatives.

The Rolling Mills at Springfield, now in the course of erection, are to be furnished with coal at five cents a bushel, or one dollar and twenty-five cents for a ton of two thousand pounds; and coal is at present delivered on the cars, for shipment, at one dollar and fifty cents; and even at these low figures the miners make from fifty to one hundred dollars a month, it being only a question of their own industry. The coal formations adjacent to Springfield, and which are found in veins of from five to six feet all over the county of Sangamon, underlaying an area of five hundred and fifty thousand acres, is not a tithe of the coal deposits found in other districts of the State—giving us, in this respect, an influence that it will be difficult to counteract or deprive us of. It may, then, be claimed that with her exhaustless coal mines, fertile soil, central position and temporate climate, and intersected and connected, as she is, by railways, with every part of the States, and surrounded by navigable waters that place within her reach the cotton of the South, the wools of the boundless plains lying east of the Rocky Mountains, the soft timbers of the Northern pineries, and the hard timbers from her own Southern forests, and the iron, copper, zinc and lead from her own mines and the mines of Lake Superior, Wisconsin and Missouri—it becomes only a question of time and capital when she will certainly be one of the most versatile and prosperous manufacturing and agricultural communities on this continent or on any other.

Amongst the many undertakings which go to enrich a nation, the manufacture of iron stands pre-eminent. Like the bountiful supplies of fish provided from the depths of the seas, you have only to put forth your hands and take it. From the first removal from "mother earth," to the last final plunge into the smelting or puddling furnace, in the form of "old scrap," the great weight and the immense quantity of coal required for its manufacture, demands an amount of capital and labor that no other material requires. Every country provided by nature with coal, iron and money does and must prosper, in the face of every obstacle, unless the population is composed of fools or barbarians. From first to last it is the product of labor in its most energetic form. The ponderous machinery which has to be applied in manipulating it, only increases the demand for the crude ore, and compels the opening of new ore beds, demanding, at every step, increased labor, increased modes of transportation and increased machinery, and an application of capital that would be altogether fabulous if we had not the evidences before our eyes to convince those who would certainly be unbelievers without such unmistakable proofs.

The enormous increase in the consumption of iron within the last fifty years, for railroads, steam machinery, ship building and other purposes, has had the effect of stimulating its manufacture both in Europe and this country; and within our own State, since the year 1865, its development has been of the most encouraging character. Chicago, drawing her supplies of iron from Lake Superior, Missouri, Brazil in Indiana, and Hardin county in this State, is at the present day consuming in her iron works one thousand tons of coal daily—transporting it on the lakes from Pennsylvania, on railroads from various coal regions in Illinois and Indiana, and on the Illinois and Michigan Canal; and, notwithstanding the enormous freights which have to be paid on the crude ore, pig metal, coal and limestone, the trade has prospered, and new works and additional facilities for manufacturing are constantly projected and are in process of construction. The Grand Tower iron furnaces procure their ore from the Iron Mountain in Missouri, after it has made the roundabout journey, by rail and water, of about one hundred and fifty miles — going first to St. Louis, to be reshipped from cars on to barges before it reaches its destination—all this circumlocution being for the purpose of bringing the superior ores of the Iron Mountain of Missouri and the superior coals of the "Big Muddy" together. The result of this condition of the coal and iron connection has been, that in three year Grand Tower has increased from a dozen shanties and cabins to a prosperous town containing a population of three thousand persons, and driving a considerable business, outside of her iron trade, in fruit, produce, coal and lumber. Additional works for smelting and manufacturing railroad bars, boiler iron, nails, bar iron and Bessimer steel are projected, and in five years ten thousand persons will derive their subsistence from the coal mines, railroads, watercraft and shops created into active life by the capital expended in this undertaking.

In addition to the Grand Tower works, other works are to be erected at the mouth of the Big Muddy, immediately opposite Cape Girardeau —the intention being to improve the Big Muddy by slack-water navigation, and boat the coal from the mines to the works. A railroad from Cape Girardeau to the Iron Mountain, and other vast beds in Missouri, moves the ore to the coal. It has been well ascertained, for many years, that the peculiar iron ore of Hardin county, in this State, made a quality of manufactured iron that for some purposes was indispensable, and this ore is now eagerly sought after by the proprietors of the smelting furnaces in Chicago, St. Louis and Pittsburgh. At present there is no railroad communication leading from these iron beds to distant points in the State, but a few years will supply this want; and the ores which are now sent outside of the State, and are returned to us in a manufactured condition, with a tax of ten dollars a ton, paid to non-residents of the State, for freighting the ore and the iron in their barges and steamboats, will be all manufactured within the limits of our own State.

Since the year 1865 several rolling-mills have been erected, designed for the re-rolling of rail road iron—which establishments are at present, and have been from the beginning, doing full work and give subsistence to some two or three thousand persons. The Springfield Rolling Mills, now in the course of erection, are designed for re-rolling railroad iron, and also the manufacture of assorted bar, boiler and sheet-iron and Bessimer steel, and will give employment, when completed, to fifteen hundred men.

It is probable that the time is not far distant when the horse, for purposes of commercial draft, agriculture and general transportation, will be superseded by the three-foot guage railroad, the road traction steamer, and the steam plow; and as all those railroads and steamers have to be constructed of iron, demanding from some source large supplies of the raw or manufactured material, and the employment of a host of mechanics and workmen for their construction and management, the question naturally occurs to every reflecting mind in the State: Where are those traction steam wagons, steam plows, and the iron for the tracks of all our railroads, and their rolling stock and equipments, to be manufactured? Are we to make them all within our own borders, or are we to purchase them from other States, or from foreign countries? Are we to send abroad several hundreds of millions of dollars in the shape of bulky and perishable agricultural products, paying the highest freights for their transportation; receiving in return those very things which we can and we should construct within the borders of our own State? At present our railroads are owned and controlled by outside capitalists, and, with the exception of the tonnage owned in Chicago, the largest amount of tonnage on the Mississippi and the Lakes is owned and controlled by residents of New York, Canada, Ohio, Saint Louis, Evansville and Cincinnati—they receiving for the transportation of our produce, and the return freights, all the profits flowing from our commerce. We are at the present day, and have been for years, exhausting our lands for the purpose of furnishing produce—out of which produce, or agricultural products, the owners of tonnage and railroads have been enriching themselves at our expense, and will continue to still further enrich themselves unless the people of the State wake up to the necessity of establishing, at every available point, manufactures requiring much and diversified labor; and the only material that can furnish that, and release us from the commercial exactions of the surrounding communities, is Iron and its various productions. All other manufactures are comparatively trifling, when brought into comparison with iron. Iron is the entire result of labor —labor in opening the mine, in procuring the ore, in making it into all its varied forms. A few years since and it cost, to produce the pig iron, $28 a ton; it can now be made for $22 50 the ton, and at that price has to compete with English iron, which costs only $12 50 the ton—that is, the labor of producing one ton of iron in the United States costs, at the present day, nearly twice as much as it would cost to produce a ton of iron in England. But to pay for this ton of English iron you have to send to England fifty bushels of corn, worth, here, twenty-five cents a bushel, and weighing twenty-eight hundred pounds, or it takes eight hundred pounds more of corn to pay for the ton of iron than the iron weighs; and if the foreign iron was admitted duty free, the difference would still be greater, as the foreign iron, from increased demand, would advance in price—iron masters in England having lost the power to control the wages of the workmen when they choose to demand an advance—while the consumption of corn or grain, or any article of our agricultural products, is found to decrease in Europe when the prices advance, showing conclusively that to pay for foreign iron we must pay in products at low prices, with the immense disadvantage of giving full freights both ways to railways, the stock of which is owned by foreigners, or in bottoms the tonnage of which is owned by non-residents of our State or by foreigners. It must, then, be our interest in every sense to promote the iron products of our State; encourage it by developing the various coal formations scattered over the choicest districts; by opening railways in every direction for the transportation of coal and iron; and, lastly, by deepening the Illinois River, so that barges loaded with pig iron and raw ore can reach Chicago from Hardin county and from Missouri.

The next ten years will be the critical time in the future establishment of the iron trade in the United States. Without presenting it as a party question in any shape, the naked fact is to be demonstrated that, with the present protective tariff on iron, and which is likely to be continued at some rate for several years, the iron trade of the country will make astonishing strides—so much so that by the commencement of the next century, or in twenty-nine years, the United States will be altogether independent of foreign countries; and the State of Illinois will not only be independent of foreign countries for her supplies of iron, but also independent of other States for manufactured iron—not only supplying the demand of her own people, but will have the ability to furnish her neighbors with the surplus of her iron productions.

SORGHUM.

Amongst the numerous experiments, combining Agriculture, Manufactures and Commerce, which have engaged the attention of our farmers for the last twenty years, and which has so signally disappointed the coolest heads and the most sanguine temperaments, none bears any comparison with the complete and overwhelming failure of all our efforts to manufacture Sugar from Chinese or African Sugar-cane. We have succeeded in making molasses; and considering that the molasses was made in pretty much the same style of carelessness visible in the ten thousand varieties of butter seen in our markets, it was generally a very fair article and supplied the place of the cane molasses during the war. In the aggregate, large sums of money were paid for cane mills, evaporators and implements, and the ruins of those investments are found amongst the out-house rubbish of hundreds of our farmers all over the State. Notwithstanding the claims of well-meaning men and imposters, who professed to manufacture the crystalized sugar of commerce, and the premiums awarded by Agricultural Societies for some of those specimens, it does not appear that during the many years of experiments by the skilled and the unskilled, by the farmer or the chemist, there has been presented for critical examination five pounds of any description of sugar that would be fit to use for any purpose where judgment and public taste would have to make the decision.

The cause of all this waste of time and capital was the want of correct and truthful information on the character and uses of the cane itself when cultivated in China, and the willful misrepresentation of those engaged in seed peddling as to the real merits of the Sorghum and Imphee corn. When too late, after the expenditure of millions of money all over the United States, it has been ascertained that the Chinese procured their sugar from the true sugar cane, and that the sorghum cane was only grown for feeding purposes, varieties of it, when properly cultivated, producing large quantities of seed, some of which seed is remarkably white and makes an excellent food. However, our farmers, from the bitter experience they have had in this sorghum speculation, ought to be exceedingly careful as to the character of all future temptations coming in the shape of promises of immense profits, when they are only designed by imposters to entrap the honest and unsuspecting; and no novel agricultural project should be undertaken, until backed up by the experience and successes of reliable men.

BEET ROOT SUGAR.

There is not, probably, within the wide range of commercial commodities which are converted by art, science and skill from the raw material, fresh from the field, into a valuable product, any one more deserving of our consideration than that of sugar when manufactured from the Beet.

Originally introduced into France by Napoleon I, for the purpose of being independent of foreign sugar, its product was encouraged and fostered by bounties, premiums and patronage, until it has prospered, and now assumes proportions so gigantic, that the number of factories in France, alone, amount to four hundred, and in all Europe to not less than one thousand.

Although much had been written, and a vast amount of loose information on the growth and management of the Beet-root, and its conversion into sugar, had been diffused throughout the United States within the last thirty years, it appears that no regular or systematic effort to manufacture sugar from the beet had ever been attempted in this country, until the purchase of twenty-five hundred acres of land in Livingston county, in this State, and the erection of the Sugar Beet Factory at Chatsworth, by the Messrs. Cheneith Brothers. Those gentlemen, not having sufficient capital to fully carry out their designs, formed a joint-stock company, the stock being mostly taken by parties in Springfield, who embarked in this novel undertaking more from motives of pure State pride and patriotism than from the hopes of any large profits. Everything that was called for, and that money could procure, was furnished without stint; but, unfortunately for the company, and still more unfortunate for the agriculture and manufacture of sugar in the United States, the undertaking, after many years of experiments, disappointments and difficulties at Chatsworth, was forever abandoned and the machinery and apparatus moved to Freeport, where Bunn, Rosensteil & Co. are erecting another factory, and in which, if they are successful in solving the problems of—first, securing a crop of beets grown by the farmers and purchased by the ton, and secondly, of getting seven per cent. of sugar of a first class quality out of those beets, the sugar-beet manufacture may be looked on as having got a permanent foot-hold in the State, and ten years will be the termination of the consumption of refined cane sugars in this State.

A general impression seems to prevail that sugar cannot be made from beets grown in Illinois. This is a mistake. The sugar made from the last crop of beets was sold in the Chicago market, and was of as good a quality and brought the same price as the same brands of refined cane sugar; and the beets grown at Freeport this past year were pronounced, by experts, as fully equal to the beets in any part of Europe in the percentage of the sugar which they gave on strict chemical analysis. The sources of failure arose from other causes, amongst which were the want, from first to last, of a full supply of water. Coal had also to be transported a long distance at great cost, the supply failing at the most critical times; the need of irrigation in the hot summer season, and the drowning of the plant in wet seasons; the costly and troublesome effort to grow, every season, several hundred acres of beets, instead of purchasing them from the farmers, by the ton. And the greatest difficulty was in securing, at any rate of compensation, skilled employès, practically acquainted with the mechanical wants of the concern, or possessing the requisite skill and practical information demanded for the conversion of the juice of the beet into first class merchantable sugar.

Next to the manufacture of iron there is no other undertaking, combining field culture, stock feeding and a highly valuable manufactured and profitable article, which can be embarked in by our people, that holds out such prospects of brilliant promise as that of converting the juice of the beet into sugar. That it can be done in this State, and done with large profit to the farmer and the manufacturer, does not admit of a doubt in the minds of those who have made themselves familiar with its history and cultivation in Europe, and of its failure in this State. In Europe the average yield of the roots, in the district where it is cultivated for sugar, is from fifteen to twenty tons to the acre. The yield of first class sugar is seven per cent., or two hundred and eighty pounds to the acre, of twenty tons of root. Allowing that our crops in Illinois yield only ten tons of beets to the acre, this would give, at seven per cent. of a yield, one hundred and forty pounds to the ton, which would net in market, at present, twenty-one dollars to the ton at fifteen cents the pound, or two hundred and ten dollars to the acre; and as a factory would work up fifty tons of roots each day, the value of the daily work would be one thousand and fifty dollars. At these figures the factory could very readily pay five dollars a ton, which would leave a balance in favor of the factory of eight hundred dollars on each day's work of fifty tons, or, at ten dollars the ton, it would leave a daily balance of five hundred and fifty dollars, or a margin sufficient to cover all the expenses of manufacturing such as the manufacture of no other one commodity can exhibit.

This present year the average yield of corn in this county is thirty bushels to the acre. It will sell at the points of shipment at thirty cents a bushel, or nine dollars for the corn grown on one acre of land. If it were in sugar beets it would yield ten tons, which, at five dollars a ton, would be fifty dollars to the acre, and at ten dollars a ton it would give one hundred dollars to the acre—either of those prices being far beyond the value of the corn. To lay the foundation for its future production, an organization of those feeling an interest in its culture should be immediately formed in this State, extending to all parts of the United States. A Beet-root journal should be also established. Seed should be imported from France and Germany, and distributed for experimenting, in several parts of the State, to farmers, in sufficient quantities to plant one acre of land, and who would be willing to receive instruction as to the preparation of suitable soil, and the planting, cultivating, digging and securing the crop. Liberal premiums should be offered for the best prepared acre for beets, for the best acre at three different periods of the growth of the crop, and for the largest yield per acre; and after a lively interest in the growth of the beet has been awakened in the minds of our farmers, and points ascertained where crops of beets can be depended on that will yield ten tons to the acre, yielding seven per cent. of sugar, then sites should be selected where water and coal are abundant, and factories erected for working up the crop. By adopting some such course as this a few years would enable our capitalists to form, from actual experiments, correct judgment as to where factories should be erected, and no more hap-hazard efforts would or should be made—failure from bad management being more destructive to the favorable opinions of the community than if they were failures resulting from the natural causes of unfavorable seasons, insects or disasters to which all crops are liable.

The present effort to establish this interest at Freeport should be regarded as highly praiseworthy, but it must be confessed that a failure would be almost fatal, for the next twenty-five years, to the Sugar-beet business in this State, and for this reason other experiments should be tried, and that extensively, in different parts of the State, so as to make a test of the soil, climate, yield per acre, and percentage of sugar. Were the State of Illinois part of the dominions of the King of Prussia, there is not a county in the State but would have been tested as to capability for producing sugar from the beet; and long ere the present day the smoke, ascending from the chimneys of hundreds of sugar-beet factories, would be visible all over the State—retaining more wealth, now expended by us for foreign sugars, and establishing an outside trade, than any other agricultural interest can ever hope to do, because of the ability of sugar, from its great compactness, to submit to a rate of freights that would be impracticable with our grains, meats, and other bulky products.

THE PACKING TRADE.

A detailed reference to each of the leading manufactures prosecuted in this State, would exceed the reasonable limits of an essay; but, at the same time, the character of the subject requires that something should be said on those branches of industry which properly belong to the conversion of raw agricultural products into a more condensed and merchantable form, in which the great bulk of those raw products are reduced, and the cost of transportation very much lessened.

The pork packing interest is the first in importance, after the manufacture of flour. There is no business that fluctuates more than this does, and no business in which the most judicious calculations and experience are jeopardized by unlooked-for depressions in the manufactured product.

The cheapness of coal oil, and the beauty of its light, has made it so popular, that, regardless of the frightful accidents daily chronicled in handling it, it has completely supplanted, for illuminating purposes, the oil and sterine made from what has been, until this last year, considered the most valuable part of the hog product; and this change is now so evident that packers are looking forward to the time when but comparatively few very large hogs will be required—young hogs of light weights, for the making of hams and light sides, and pickled pork, being such as will be generally required. Ice packing in the warm seasons is beginning to tell on the winter-curing—the animals costing less, and the fresh-cured hams and fresh lard finding a preference in market to the very best of winter-curing. In addition to those changes, eastern establishments purchase in Chicago market, all through the year, live hogs, and cure them for the English market, selling, in the populous towns of New England, such animals as are unsuitable for English meat, and also disposing of the offal in the same manner.

It is, then, evident that the pork trade is undergoing a certain revolution. The business of packing, which was, until recently, confined to certain favored points, and restricted to a few weeks of winter weather, and demanded the largest and fattest of animals, will hereafter spread itself all over the year—be carried on at any point where cheap ice can be procured and the offal disposed of to advantage—and the bulk of the animals required will be younger, and carrying less flesh, and will be altogether different from the prize breeds of the present day.

THE GRAIN TRADE.

Immense as the Grain trade of the West has been, in the past, we may certainly predict that in the future, when the vast regions of country lying west of the Mississippi are developed, that the production of grain will be so enormous as to tax the ability of all our commercial projects in transporting it from the places of production to such markets, in other countries, as may become our customers. Even at the present time, with a cultivation confined to three or four Western States, had we two or three seasons in succession that would give us abundant average crops of grain, the product would be so enormous as to make it almost valueless—all our present means of transportation, both by land and water, being inadequate for the demands of such an accumulated over-supply.

As part of the grain trade in this State, the manufacture of Flour is largely embarked in—our mills having a grinding capacity of one hundred millions of bushels of wheat, annually; and as almost all of those mills are fitted up with improved machinery, the quality of the flour is good, it being only governed by the quality of the wheat, the manufacturing being usually well done. It is not necessary to dwell on the flour manufacturing interest, further than to suggest that the same cheap lines of transportation, leading to distant markets, that other bulky articles demand, are also required for the transportation of flour, with the additional requirement of shorter and quicker outlets than many of those other products call for.

But the grain trade, although not creating manufactures directly, yet demands as much capital and as much commercial sagacity to handle it properly as any other business within the extended limits of Western trade.

There are, at the present time, two Western cities, which have entered the arena of modern commerce, and are now stretching forth every arm of their wealth and resources in order to secure to themselves a monopoly of the transportation of the grain crops of the States bordering on the upper Mississippi, to the Atlantic seaboard. One is Chicago, with her thousands of miles of railroad stretching away to the North and West, and her ocean lakes connecting her with the Atlantic by the Erie Canal and the St. Lawrence. The other is St. Louis, floating down to her harbors, for the last fifty years, the commerce of the upper Mississippi and Missouri, out of the profits of which she has built up whole miles of streets, and, it may be said, her whole city. Chicago, hitherto, has relied upon her favorable geographical position, believing that the railroads leading West would transport the grain to her elevators, and that the lakes would give her the means of placing those grains on the Atlantic seaboard on better terms than they could be sent by railroad.

St. Louis proposes, through a system of barges, to receive the grain from the upper waters of the Mississippi, move it to New Orleans, and ship it directly to Europe—both routes being impeded during the winter months: the grain trade, at that time, being altogether suspended in its water transportation.

Chicago proposes a mixed transportation system—and carries it out—of railroads, lake, and Erie Canal navigation. St. Louis relies on her barge system alone.

A third competitor—Cairo—is entering the field, and, from her position, will attract, during low water and winter, all the grains that are seeking a market South, during those difficulties.

The public should encourage all these rival interests, as it is only by such rivalry that the enormous freights which have to be paid, at present, can be reduced. The Illinois River should be made navigable at all times during the open weather, so that grain shipped in barges on the upper waters of the Mississippi, or at St. Louis, would have two unimpeded routes—one to New Orleans and the other to Chicago—by the Illinois River and the Illinois and Michigan Canal; and lastly, the whole system of wooden vessels should be abandoned and iron barges substituted, so that they could be made water-tight all round and towed down the Mississippi, or down the lakes and through the canal, without breaking bulk.

Elevators, for handling the grain, should be erected at every point where they are required, and every elevator should have connected with it a drying apparatus, for drying the grain. The objection made to the New Orleans route is the dampness of the climate. New Orleans cannot have any moister climate than Odessa, or the ports on the Baltic, and is certainly dryer in every respect than England or Ireland, where the grain has to be kiln-dried, during many months of the year, before it can be ground. The cost of kiln-drying, and the loss of weight, are the objections made to drying. Those objections are not good when properly examined. There are at present in use at the State House, Springfield, two different systems of heating: one is by steam, the apparatus being very beautiful and complete, doing its work to perfection; the other is the hot-air system. After a careful examination of both these systems, with a view to the drying of grain, I have come to the conclusion that the cost of drying grain by hot-air, in place of steam applied in any form, cannot exceed one cent the bushel, and that it can be dried at the rate of five thousand bushels a day at that rate; and so simple is the hot-air system, that any person can learn to manage the heating apparatus in one day. The loss, in weight, would be an advantage to the grain—it cheapens the freight by reducing the bulk; and its preparation by drying, before shipment, would add to its value in any market where people have ordinary business judgment.

Particular reference to the various manufactures at present conducted and in the course of preparation in the State, would not now be desirable; but the general success of our Cheese factories, Woolen mills, Watch factories, Plow, Wagon and Agricultural Implement establishments, and numberless other constructive organizations, companies and individuals carrying on different and various mechanic and other manufactures, are evidence in themselves of the estimation in which our resources and facilities of ready markets are held by all those embarking in these different undertakings.

In Textile Fabrics we are shamefully behind the age, there being no excuse for our neglect of this essential interest. With Cotton growing almost in sight of our coal fields; abundance of female labor, that could be commanded in our cities and towns; a home market for all that could be made for years to come; with a population of nearly three millions, consuming, on an average, ten yards of cotton cloth each, annually, or thirty millions of yards of cloth a year—we allow ourselves to send the raw cotton over our railroads to the Eastern factories, have it made into cloth, purchase it back from the New Englanders, giving, in payment, fifty-six pounds of corn for two yards of this cloth, which corn, by the time it reaches the consumers, has passed over a thousand miles of railroads outside of our State, the freights on it bringing it up to one dollar a bushel, one-fourth part of which is our share, the other three-fourths being distributed abroad and amongst those who have turned all their energies to the building up of their own home industries, and who, like the spider, sit watching the little foolish Illinois fly drift against the fatal net, making only a feeble buz as it slowly perishes from the sucking out of the stream of life.

The same condition of things which applies to the manufacture of cotton cloths, applies, with the same force, to every manufactured article we purchase from outsiders. We have to pay for their condensed, light and valuable goods, in agricultural products which are bulky, cheap, perishable, and fluctuating as the weather—almost always controlled by some unscrupulous ring of speculators, whose characters partake more of the gambler than of the high-toned and honorable merchant, or vibrating in the scale of over or under-stocked markets, with an uncertainty that adds additional hazards to the trade, and is constantly dragging down to bankruptcy and ruin the majority of all those who soil their hands with the dangerous traffic.

No better illustration can be given of the comparative merits of the commerce of Agriculture and the commerce of Manufactures, than is at the present time exhibited on the Erie Canal. One night's frost icelocked the canal so as to embargo five hundred canal boats, all loaded with western products bound for New York, the value of which is five millions of dollars, and which has to remain unmoved for four months. Not one solitary boat filled with the manufactures of New York or New England, and moving West, can be found caught in this commercial trap—it paying even the makers of stoves and heavy goods to move them west on railroads.

The doctrine and principles of free trade, however correct and truthful they may be, when one manufacturing industry is offset by another in two different countries, yet, when the application of these principles is made between countries whose sole dependence, for the accumulation of wealth and subsistence, is on their workshops and factories, and others depending alone on their agricultural products, the manufacturing community, through its capital, commerce and enterprise, very soon absorbs all the wealth of the agricultural communit and all the fertility of the soil, neither of which can be restored or renewed unless the accumulated profits of the manufacturer are expended in those agricultural countries, in the shape of loans for the erection of public works, or opening new avenues of commerce. Russia, Ireland and Illinois are illustrations of this principle, and, we might add, the cotton and sugar States of the South.

Russia, the granary of England, has for years supplied her with breadstuffs, at such low figures as to drive off all competitors, and so poor has it made her, that all this grain is carried in British bottoms. Russia, with her abundance of ship-building material, but without the essential capital, fails in being able to build up her own commercial navy to transport the wheats grown on her own soil, and sold at less than their real value; and she not only sells England her wheat at reduced prices, but when she requires money or iron for the construction of her railroads, she calls on England for loans, and gets them from the English manufacturers without stint.

Ireland lies within twelve hours' travel of the great manufacturing centers of England. Railroads and lines of steamers, owned almost exclusively in England, which can, in forty-eight hours, convey to any of those manufacturing centers the product of Irish agriculture, are constantly transporting those products to English markets. The English pay for Irish products the same prices as they pay their own people for English products—the most untrammeled free trade existing between the two countries; yet the condition of Ireland has been, for the last three-quarters of a century, one of suffering, famines and horrors unknown to any other Christian people on the face of the earth—paying enormous rents to landlords, who spend those rents in England or elsewhere, and leaving, for the subsistence of the population, food that is scanty and of the cheapest description, and who have to purchase everything outside of their subsistence from the factories of England. During the famine of 1846, Ireland exported food sufficient to feed seven millions of people in England. At present her population is three millions less than it was forty years ago; and not less than eight millions of her sons and daughters are scattered, broadcast, from her shores throughout England, Scotland, Australia and North America—this dispersion of her people being due to natural causes, always existing in very populous countries; but the reduction of the population is owing, mainly, to the standing fact that the working classes of Ireland have crossed the British Channel and are employed in English workshops, in place of working in Irish workshops.

Illinois—associated as she is, by political ties, with other States—appears to settle down to the conviction that she has such vast resources in her agriculture, that it does not require any effort, on her part, to attract population and wealth, by presenting any other inducements to capitalists and emigrants than those which all new countries usually present, until their lands have increased in value, and are fit and profitable investment for persons desirous of deriving fixed incomes from them, as property. But, notwithstanding the claims advanced in favor of the agricultural prosperity of Illinois, the facts show that she has been standing still, or comparatively still, for the last ten years.

The number of acres in cultivation—the number and value of the domestic animals assessed—the real valuation of the lands by the assessors all over the State—show, conclusively, that we are not keeping pace with the railroad, manufacturing and commercial interests in our cities and elsewhere, and that we have not made as much progress in the average annual yield of our agricultural products as some of the oldest countries in Europe, with their exhausted lands, have been doing in the same number of years. Our farms are too large for the maintenance of a dense population, and the introduction of improved agricultural implements is still further reducing the agricultural population, by withdrawing it from the use of those implements in the field,* and transferring it to shops for their construction.

In manufactures, she has two powerful antagonists to contend with: England, with her great prestige, unlimited capital, abundance of coal, cheap labor, and mercantile navy, carrying both the raw products of other countries and the manufactures of her own; and in this country, the New England States, New York, Pennsylvania and Ohio, having the same resources as England, with the additional advantages of a domestic market, and the fostering care of the general Government, in the form of a protective tariff.

All of them are the active rivals of Illinois; all overbid her in the cost of the raw material, and undersell her in her own markets. The tariff that restricts British, French, and German products is no protection to her against the competition of other States, nor does it prevent the New Englander, or other outside manufacturers, from crushing her in her own markets, if they desire to do so. All they want is markets. We want not only the markets, but we want labor, capital, and banking facilities. In this condition of affairs, her agriculture, which should be, as it is in other countries, a permanent institution—yielding fair average results, and demanding fair average prices—has been and is still one of the most uncertain and fluctuating. Nothing appears to pay for a series of years. Even the chosen crop of the State—the corn crop—which should average, annually, fifty bushels to the acre, is reduced to twenty-five, and our farmers, irritated by failures and continued disappointments, move to other States, or are constantly on the search for some "new departure" in agriculture, in the hopes of healing the wounds that afflict them; and year after year witnesses the failure and disaster attending the thousands of individual experiments made in testing some new-fangled dodge in animals, trees, roots, seeds, or poultry.

But still the same causes of depletion and embarrassment exist and are perpetuated. Our commercial lines of transportation, like interest and compound interest on money, eats up your profits and gnaws away your vitals. You are skinned by your own railroads, which are owned out of the State—the interest due to holders of stock, or mortgages, passing out of your State to foreigners, for ever. You are skinned in the transportation of your live stock, they losing a certain percentage in weight while moving on your railroads, to be eaten up by the people in Eastern factories. You are skinned in your grain trade by the different sharks which form the grain rings at the central grain markets. The time it requires to bring your crops to the consumer skins you out of the interest invested in the original purchase. St. Louis has skinned you out of the materials which have built her up into a colossal city, and is now ready, with seven miles of barges that have not cost two millions of dollars, to continue the skinning, and build up another city out of your indifference to your commerce. You skinned yourselves out of the wool trade, and now Texas is making tracks with her "long horns," and will certainly skin you out of any more fancy prices for your great staple, short-horn beef. And lastly, hundreds, yes, thousands of your farms are in the hands of the Eastern money-changer, and by the time you get through with him and his interest, and life insurance, you won't have a thing left; and you have helped to skin the State just the amount of interest and trimmings that you have been paying him for years.

How, then, are all those continued ulcers to be healed? Not by holding conventions to patch up constitutions; not by talking for months, in our legislature, the twaddle of vested rights; not by legislative drivilling over the salaries of office-holders, not one of whom add one shilling to the wealth or prosperity of the State; not by making war on railroads—but by making more railroads. Connect Cairo with the East, West and North of the State, until her railroads will be like a fan spread out upon the State map. Let us have an open commercial communication with the Gulf of Mexico, when all other water communications are locked in "winter's icy arms." Give us railroads East. If the three-foot guage roads become a success, they will add twenty-five per cent to the value of every farm in Illinois. Let us have them everywhere. Improve the Illinois River, and cover with public indignation the truckling politician who would array different parts of the State against each other, so as to prevent the Illinois River from being made, within the next five years, the most valuable internal piece of water communication in the valley of the Mississippi, and when completed, cover it with barges owned in the State, and reaching from its mouth, in one continued line, to Chicago. When that is done, you will have cheap freights, in spite of all monopolies. Encourage every manufacturing enterprise, little or gigantic; and if the provisions of the present constitution conflict with the making of railroads, or the opening of new channels of commerce, or the erection of one solitary rolling mill, change it, and make it conform to the interests of the State and the spirit of the age.

No strictly agricultural country has ever, or ever can, build up a commercial navy, or open costly lines of internal transportation, or construct the artificial harbors, ports or docks which are the wonders of modern commerce, or furnish banking facilities, or create a national debt, out of the simple annual profits made by growing any description of products. Egypt, India, Italy, Spain and Russia have been for thousands of years pouring forth their agricultural treasures, and at the present day are so poor that they have to call on foreigners for money to make their railroads and conduct their commerce. Texas has seven millions of cattle feeding on her boundless plains, yet she cannot make fifty miles of track, and has to drive her stock, with the rack of the whip, nearly one thousand miles. Out of the five thousand miles of railroad within the State of Illinois, there is not five hundred miles of it paid for directly by the farmers of the State—all being paid for by bonds bearing interest, those bonds being cashed by English manufacturers.

It must be admitted that for the creation of the immense capital essential to modern civilization, something else must be done than the growing of grass and grain and the feeding and fattening of animals. You must have manufactures and commerce, not only to supply your own population, but you must construct for outside markets, and thus, by creating home markets for your farm products, save the cost of transportation to distant consumers. Illinois at present sends abroad food sufficient to feed ten millions of people, besides supporting her own population. Those ten millions, if employed in manufactures and commerce on her own soil, would furnish better markets than she can ever hope for as long as she is doing as she is at present: sending her bulky products thousands of miles, seeking markets.

Within the last few years the manufacturing interests of Great Britain and the United States have assumed a position quite different, in their relations, from the preconceived ideas of labor and capital, which the early speculative writers and authorities on political economy endeavored to inculcate as being the only sound ones in principle. As the manufacturers of Illinois will be more or less affected by those changes, it would be well to devote a little consideration to the social influences which such changes may have upon our population.

The apprenticeship system, as pursued in Great Britain, has been found to be entirely for the benefit of the master manufacturer, his profits being increased without paying just and remunerative wages to the apprentice, at the same time producing an excess of skilled labor, and seriously interfering with this skilled labor, and depriving it of that remuneration which working men require for the honest support of their families. When we carefully examine the causes of the prosperity of the manufacturers of Great Britain, it will be found that those manufacturers have derived more profit from the labor and skill of their seven years' apprentices than from any other source—those apprentices, until recently, receiving but a bare pittance, hardly sufficient for supplying them with the poorest food, and clothing of the most inferior materials. Happily, this system of plundering the young artizan is altogether unknown in this State, and he receives, from his first initiation in his trade, up to the last hour of his term of apprenticeship, the full value of his services—thus presenting him with a powerful motive for the diligent performance of all the duties of his occupation, without in any way forcing a reduction in the rate of wages paid to the older and most accomplished workmen.

No enterprise or business qualifications, on the part of our American manufacturers, can ever hope to compete successfully in any market with articles manufactured under the vicious apprenticeship system which prevails in Great Britain. The down-trodden English apprentice is continually forced by his master to meet, by his ill-paid labor, the orders taken by his employer, at such low prices as to give British goods a complete control of the markets—thus effectually beating down all healthy opposition from manufacturing communities in which the apprentice is fully paid according to his abilities and industry. It may, then, be safely assumed that any branch of manufacturing industry that has to compete with the ill-paid English apprentice, cannot be successfully conducted in this State, and it would be the hight of folly to attempt such a hazardous contest.

Combinations amongst working people, with the design of effecting, by concentrated action, an advance in their wages, are a creation of the present century. In the infancy of the cotton and woolen manufactures of Great Britain, combinations of working people destroyed many of the mechanical contrivances first constructed for facilitating those manufactures, under the apprehension that machinery would supercede manual labor, and reduce the rate of wages, already at a very low standard. It has taken a great many years to disabuse the mind of the mechanic of this grave error, and it is only in communities where the grossest ignorance prevails amongst the working classes that it receives any consideration. But combinations designed to fix the rates of wages of the peculiar occupation of their members, have, from violent beginnings, often attended with loss of life and destruction of property, assumed a legal and legitimate position, and have become a power which, if not abused by excesses, or unreasonable demands at unseasonable times, will have the certain effect of elevating the industrious, intelligent and respectable mechanic, and of placing him on a social equality with those who are regarded, from the character of their occupations and their pursuits in life, to be of a superior order of society.

Emigrants usually leave the country of their birth, or adoption, with the design of bettering their condition, and of securing, by their industry, perseverence and intelligence, a reasonable share of the comforts and luxuries of life; and it would be the extreme of folly for Illinois to encourage or countenance any system or branch of manufacturing whose rallying cry would be "low wages," if we think, by presenting such debasing inducements to immigrants seeking homes, that we can persuade them of the advantages of settling in our midst.

It is to the interest of the immigrant to have nothing cheap but his tract of land, if he is a tiller of the soil. It is to his interest, and the interest of the community where he locates, that he receives the most liberal compensation for every act of his peculiar occupation. As a farmer, if the products of his labor have to depend upon the prices he is to receive for his beef, pork, wheat, corn and wool, and all the varied results of his capital and industry, from the "six bits a day" mechanic, it may be taken for granted that the healthy flow of emigration from the older States, and from Europe, which has fertilized our State and enriched it in every interest, would soon be directed into other channels, leaving us to enjoy the unpleasant privilege of living in the "log cabin," dressing in "home spun," and eating our primitive "hog and hominy"—very good things in their places, but, just at the present time, agreeably out of fashion.

Illinois is now entering on a new year—it may be said a new era. The year 1871 has passed away, leaving a dark record of wars, revolutions, famines, fires, shipwrecks, floods, earthquakes, deaths and disasters unsurpassed by the records of any of the annual visitations of the gloomy ages of the past. Upon the dark pages of her record the fire-fiend has made his destructive mark in burning words and blazing monuments; but she is still erect, proud, glorious, progressive. Her agriculture feeds the millions; her social progress is the wonder of the age; her railroads ramify to almost endless space; her commerce spreads its vigorous arms, grasping at new material for the exercise of its expanding genius and enterprise; and her manufactures, resting on the almost everlasting coal beds, have thrown themselves into the thickest of the battle, where her climate, soil, geographical position and natural resources will crown her with victory, prosperity and happiness.

PLANTING AND CULTIVATION OF FOREST TREES.

BY H. J. DUNLAP, CHAMPAIGN.

The first thought that strikes a new comer to the prairies, is the absence of trees. To be sure, if the country was covered with trees, it would no longer be prairie; but so accustomed has the emigrant from any eastern State become to associating timber land with farm land, that the absence of it seems strange; and one would suppose that, having this feeling, the first thing he would do, after breaking up his farm, would be to devote some part of it to the growing of forest trees, but, in the majority of cases, the settler contents himself with sticking out a few fruit trees, and then swearing at the country for not having more timber in it.

As I sit in my room writing, to-day, I count from the window twenty houses, on as many different farms, that have been located within the past sixteen years. Eleven of the buildings are surrounded with more or less trees—Maples, Cottonwood, Willows, and various kinds of fruit trees. Nine other buildings stand without hardly a tree, although some of the owners are wealthy men. On not one of these twenty farms has an effort been made to provide shelter belts, by planting forest trees, and not half of them contain a rod of hedge.

Some of these farms have large orchards planted on them, which produce but little fruit, and that little mostly on the north and east sides of the orchard. Some of these orchards contain trees large enough to produce five barrels of apples apiece, yet their owners make annual excursions to the timbered country along the Wabash for their winter fruit.

Do you know the reason why these trees do not bear fruit? Simply for the want of protection from our sweeping winds in winter and early spring. This is no theory, but has been demonstrated in more cases than one in this county.

But there are other reasons for planting trees on the prairie, than that of merely protecting our orchards. They should be planted for shelter, for shade, and for all purposes to which timber can be put.

FOR FUEL.

Do we need to plant trees for fuel? I answer, no; there is not a farmer in Illinois that can afford to burn wood for fuel. It costs more, by the time it is put into the stove, than the amount of coal would to do twice the heating. Yet there are many persons who prefer to burn it, for the supposed reason that it is healthier or cleaner.

Fifteen years ago every farmer thought it necessary to own a piece of timber, to supply fuel and fencing. To-day, I venture to say, not one in ten of those men own a foot of land in the grove, and they would have been much better off to-day if they never had owned any.

The possession of a few acres of timber induced many farmers to build fences where none were needed, and to neglect the planting of hedges, which would otherwise have been done. Our people seem to be infatuated about fences. They spend their money for fence boards, and build fences, seemingly, for the mere pleasure of building. I once knew a man who owned a forty acre farm, which was fenced into twelve lots, none of them over five acres in extent, and it is safe to say that one-eighth of that farm was occupied by fences that were of no use, and this man was only a sample of the whole neighborhood. Fences, at best, are only a necessary evil, making corners for foul weeds to grow seed in, to spread over the whole farm. I have been through the timber fever, and have fully recovered; so much so, that I would not take, as a gift, the best forty acres of timber land in Illinois, and be obliged to burn wood from it for fuel.

FENCES.

Fences will probably always be needed, although, it is to be hoped, not so extensively as at present. Statistics show that the fences in our western States cost more than all the houses, barns and other buildings on them. Fences are generally used to fence stock out, instead of in, and unless we have a law making it obligatory on every man to take care of his own stock, they will have to still be made. These fences cost ten per cent. per annum to keep them in repair, which cost has to be taken from the already small enough profits of the farmer. However, there exists but little excuse for the repair of a fence the second time, where hedges can be grown, and that region includes all of Illinois.

FOR BUILDING PURPOSES.

We should probably call a man a fool, that planted trees, and then waited for them to grow large enough before building his house. His grand children would be grey before the Oaks, Ash, Pine, or Spruce trees would furnish saw-logs large enough to be sawed into boards, or to make a log house of. He might plant those trees for posterity to saw up; but the land could, doubtless, be put to a better use.

FOR SHELTER.

Shelter is the greatest need of our prairie farms, and where they are surrounded by belts of timber, the productiveness of the balance would more than make up for the land planted to timber. Had we more trees, our rain-fall would be more evenly distributed; our winds would not rush across the country at a hurricane gait, carrying our moisture and food-producing elements to the timber country further east and north of us; our summers would not be subject to such severe and extended droughts as have occurred during the past two years; and our winters' snow would not all be piled in the roads and along fences, instead of being spread evenly over the surface, protecting the grain and grasses growing underneath.

WHAT TREES TO PLANT.

These shelter belts can be made a source of revenue to the farm, in addition to the protection they afford.

But, before planting, we must have some object in view—some use to which our trees can be put when they are grown. We also want to know how, where and when, to plant. Many persons have planted timber trees without any well defined object, and the result is that they have nothing but protection. Their trees can neither be sold for posts nor be used for manufacturing purposes. While advising people to plant trees—a Willow rather than nothing—we can point out to them reasons for planting such trees as can be used on the farm or be sold to others when they arrive at the proper size.

SOIL.

But few of our forest trees will grow in wet soils; of those that do, none are particularly valuable, being such as Cottonwood, Poplars and Elms. Any soil, whereon water does not stand for any length of time, will do to grow forest trees on. Where a continuous belt is required around a farm, and wet places intervene, Elms, Willows or Cottonwood may be planted to preserve uniformity. It is useless to plant other than these, where there is standing water.

To prepare land for tree planting, it should be well plowed; like every other crop, the better order the soil is in, the more certain are the trees to grow and do well. Usually, forest trees are planted from the seed bed when they are one year old. After the rows are marked out—which may be done with a corn marker, a line, or in any other convenient manner—the planting may be done with a spade or dibble. Where the roots are large and spreading, the spade answers best, one man pressing the implement in the ground, drawing the handle toward, or pushing it from his body, thus opening a place for the roots, into which another hand places the young tree in an upright position; the spade being withdrawn, both men then press the soil closely around the tree by placing their feet on opposite sides of it. The young trees should be carried in a pail filled, partially, with water. In this manner an active man and boy will readily plant five thousand trees a day, and do the work well. Hedges should be planted in the same manner.

Some varieties of trees, that have but few side roots, may be planted with a common dibble, which consists merely of a piece of hard wood, a foot long, sharpened at one end, with a cross-piece at the top for a handle. The hole is first made with this dibble, and the plant dropped carefully in; then run the dibble down by the side of the plant to fasten it, and fill the hole thus made with loose dirt. From five to ten thousand plants per day may be set by a good hand, but the ground must be deeply plowed, and be otherwise in good condition. A very little practice soon learns a man to do the work skillfully and well.

WHAT DISTANCE APART TO PLANT.

The distance apart that trees should be planted, varies, according to the purpose which they are designed for. Closely planted trees grow tall and spindling, require but little pruning, and soon shade the ground, so that cultivation can be dispensed with. Some varieties, as the White Ash and Elm, will bear close planting, and will, in five or six years, make hoop poles. These should be thinned at that age, leaving one-half standing. Larch and Evergreens require more room, unless they are grown for vineyard stakes or something of that kind.

The first mentioned trees may be planted one foot apart in the row, and rows four feet apart, the latter two by four feet, to be afterwards thinned to four by four or four by eight feet. Planted one by four feet, ten thousand plants will be required for an acre; two by four, five thousand. Nearly all the deciduous trees can be purchased from nurserymen, who, by growing large quantities, can afford to sell cheap. Plants one year old are usually sold for two to three dollars per thousand. Nearly all of them can be grown from seed by the farmer himself, if he but take the time to gather them in the forest when ripe. They should be planted as soon as ripe, in drills like peas, and grow just as readily. Evergreens are more difficult to grow, requiring great care, as they are extremely tender while small. The seed is mostly imported, and can be had of seed dealers. The better way is to purchase the plants at two or three years old. Evergreens, taken from the forest and planted on open prairie, usually die, but if shaded, they sometimes grow finely. Evergreen roots are very sensitive, being very resinous, a slight drying sufficing to kill them, and they must be handled with the greatest care. Millions of Evergreens have been shipped from the forests of Michigan and Wisconsin that were killed by exposing the roots before they were packed. Better pay a little more, and get plants from men who make a business of growing them.

USES OF TREES.

The principal uses for which forest trees may be planted are fence posts, railroad ties, vineyard stakes and hoop poles. Of course there are many other purposes for which timber is used, but it will require from thirty to fifty years for the trees to get large enough to be profitably cut down.

There are constantly occurring wants on a farm for poles and stakes and levers, and for this purpose we can plant those rapid, tough growing trees, like the Ash and Elm. Any low, wet or waste ground may be planted to White Willow or Cottonwood, which grow rapidly and furnish considerable wood at five or six years. The Willow will never need to be replanted, as it sprouts readily from the stump.

FOR FENCE POSTS AND TIES.

No tree excells the European Larch in rapidity of growth, strength and durability. I need not recount the many other uses to which this wood is adapted, but will consider it merely as a wind-break, for vineyard stakes, posts and ties. As a grower, the tree is upright, symmetrical and strong. Two-year old plants I consider best for planting. At that age they average one foot in hight, and at six years from planting will be from eight to ten feet high, and two to four inches in diameter; provided, always, that the same culture is given them that is given to corn. At this age the trees may be thinned to four feet apart. They do not require further cultivation, their dense growth so shading the ground that weeds cannot grow. At ten or twelve years from planting, a majority of these trees will make good fence posts, more durable than any other wood.

I may say here that the Red or White Cedar, treated in the same manner as the Larch, produce the same results, only requiring a few years longer time.

Whether or no it will be profitable to grow these trees for the purposes spoken of, is a question, depending entirely on the continuance of the demand for stakes, posts and ties. Of the probability of this remaining so, others are as well able to judge as myself.

Next in value for rapidity of growth and durability, when set in the ground, is the Osage Orange. When grown for such purposes the trees should be planted about twenty inches apart in the row, and the rows four feet. An annual pruning must be given to induce the trees to run up; besides, it is a poor plan to allow any tree to waste its strength in growing side branches, which are afterwards cut off and thrown away. At six years these trees will make vineyard stakes, hand spikes, etc., and should be thinned to one-half. This tree grows very fast, when given room, and but a few years will be required for it to grow large enough for posts. This wood, when seasoned, is very tough, and answers admirably for mallets, buts, hubs, wagon axles, etc. It makes a large tree, and is very ornamental. There are no insects, that I am aware, that prey upon the growing wood of either Larch or Osage.

Were it not for the borer, that has nearly destroyed the trees, the Yellow Locust would perhaps rank next to Larch for profitable planting; but it is not worth while to plant them, for, sooner or later, they will fall a prey to the borer, which, added to their bad habit of suckering, is enough to condemn it for timber planting.

The Elm and Ash may be planted where there is a demand for that kind of timber. It will take many years for the trees to become large enough for sawing into lumber; but for the purposes spoken of before, and for hoop poles, for which there is an increasing demand, they possess some value.

For purposes of shelter, ornament, and rapidity of growth, I do not know of any trees better than Ash-leaved Maple (*Acer negundo*), White Willow, Basswood, Sycamore and Cottonwood. Of these the Maple and Basswood are grown from seed; the others grow freely from cuttings, and are adapted for low or wet soil. In addition to their other values, the Maple and Basswood furnish large quantities of honey, at a time when other honey-producing flowers are scarce.

The Soft Maple, like the Locust, was largely planted some years ago, but a borer, resembling the flat-headed apple tree borer, has destroyed many trees, and will in time ruin all that are left; therefore I cannot advise any one to plant it.

The Lombardy Poplar grows rapidly, and for a temporary shelter does admirably. It sprouts whenever the roots are broken, and soon becomes an unsightly object. Its wood is of but little value.

The Honey Locust is a rapid growing, wide-branched tree, the wood of which is said to be very durable for posts. It is well adapted for a hedge plant, where the Osage winter-kills.

The Catalpa, a native of Southern Illinois, is easily grown from seeds—grows very fast, and although the wood is spongy, it is said, by those who pretend to know, to make very durable posts. It is only half hardy, however, as we get toward the north line of the State; but in the center, seems to stand the winter well.

To the foregoing list of deciduous trees, remain to be added those that bear nuts, the value of whose wood we know so well.

The Oaks are not very rapid growers, but may be planted in shelter belts to help make a variety.

The seed of all nut-bearing trees should be planted in autumn, in ground well prepared with the plow and harrow. Furrow out the ground with a small plow, in a similar manner as for potatoes. Drop the nuts at suitable distances apart, say one or two feet, for these trees must remain where the seed is planted; none of them transplant readily. Acorns, hickory and chestnuts should be planted as soon as they fall—a few days' drying injures their germinating qualities; cover two inches deep, and mulch the rows with straw. Walnuts, both white and black, may be covered three inches, and should also be mulched. These trees all require dry soil; it is useless to plant on wet land. The young plants should be kept free of weeds for two or three years; after that they can take care of themselves.

EVERGREENS.

Much has been said of the value of Evergreens for timber; but for other purposes than for wind-breaks or for ornament, I do not conceive them to be specially profitable, except to the nurseryman.

The most profitable of all is probably the White Spruce; it grows fast, is hardy, and makes a beautiful tree.

The White and Red Cedars have been already spoken of; they may be planted on low land where little else will grow.

The Pines, Balsam Fir and Hemlock all make handsome trees, and in a few hundred years after planting will doubtless be large enough to furnish some lumber. To those who plant for posterity, I can heartily recommend the evergreens.

SHELTER BELTS.

A few words about Shelter Belts, and I am done. Every farm should be protected on the south, west and north sides, and as many cross belts as circumstances will permit. If more than one variety is planted, care should be taken that the most rapid growers be placed on the north side. Evergreens should never be planted in the shade of other trees, and should always be on the south side of the belt. From two to four years cultivation will be required, the time depending entirely on how fast the trees grow the first few years. A little care in pruning, shortly after the trees commence growing, will throw the strength of the growth where most needed. Belts should be at least two rods wide, and as much more as circumstances will permit.

How best to encourage the planting of Forest Trees, is a question. That people will not do it voluntarily, except in few cases, is a fact. Perhaps exempting the land devoted to forest trees from taxation for a few years might stimulate the business.

PRINCIPLES AND PLANS OF LANDSCAPE GARDENING,

AS ADAPTED TO

BEAUTIFYING THE HOMES OF THE FARMERS OF ILLINOIS.

By W. C. FLAGG, Moro.

Landscape Gardening is one, and perhaps not the least important, of the fine arts. Yet it is later in its development than its kindred arts of Painting, Sculpture and Architecture. "A man shall ever see," said Bacon, "that, when ages grow to civility and elegance, men come to build stately sooner than to garden finely, as if gardening were the greater perfection."

The art of the Landscape Gardener, like that of the Artist in the photographic galleries, is not so much to paint a picture as to touch up one made to his hand. Given the contour of surface, the plain, the woodland, the stream and lake, he is to make the most of them by adding a tree here, and felling another there, until the most is made of his material. It is not a creative art or imitative art, like that of the painter and sculptor, because thus limited by the actual facts in hand, but it affords special opportunities for tasteful ingenuity to cover natural defects, and make the most of existing beauties. Perhaps the skill to do this is not less than is required for other artistic work. As in certain ideal portraits the painter takes the commonplace or ugly face, and, without losing its identity, glorifies it by his pencil, so the landscape gardener shapes into a finer beauty the ordinary outlines of the landscape.

With large means and a broad field to work upon, this would not seem so difficult. It would seem as if nature might be compelled into the lines and forms of art. But the landscape gardener's work is nicer and more sinuous than this. He must go about difficulties that he cannot overcome, and hide what he cannot remove. He must work with limited means to an imperfect end.

This is eminently true when we come to adapt the art of landscape gardening to the wants and abilities of the farmer. The farmer who undertakes to adorn his farm by the methods of landscape gardening, must consult utility as well as taste: economy as well as beauty. He must be content with less than he would like, and depend upon the more natural, but fortunately not less attractive materials of landscape gardening.

When I speak, therefore, of landscape gardening hereafter, it is subject to the conditions I have just named, and first, of the material we have to deal with.

First, a country either flat, or more generally gently undulating, with a scanty supply of indigenous trees.

Second, farms of various sizes, from eighty to six hundred and forty acres, and larger, on which but a few acres can be given to strictly ornamental purposes, but many to a combination of the useful and agreeable, provided the two can be harmonized.

Third, farmers, many of them improving new farms, and, even though thrifty, more than busy with building homes and barns and turning up fresh furrows—men who have not yet had the time and hardly the desire to make their homes more pleasing to the æsthetic sense.

This is not a promising prospect, yet it has better features. In the first place, our farmers are generally thriving, and quite willing to spend a little in the way of adornment, if it will effect what is promised. Then, most of them have land enough to be easily able to spare a few acres, or even ten or twenty, to plant with trees, about their houses. Our country yearly improves in landscape effect, as farm houses, orchards and trees increasingly dot the plain, and opens up more pleasing views to the looker-out from every homestead.

These being our conditions, what should we attempt in the way of beautifying our farmer homes?

1. We should, where yet practicable, select the best site for our home that the farm affords. Many will suppose this must be near the highway, so close as to command a searching stare at all who pass; but this is by no means a necessity, though so many feel it is that I despair of reforming our people. But all will agree that the house should be built on high, dry ground, commanding a good prospect, and sheltered, if practicable, on the west and north by woods or higher lands. It should be at least far enough away from the highway to be

free from its noise and dust. It should be, to suit our landscape, in the the Italian style as modified for our American climate and wants. This harmonizes best with the level or gently undulating lines of our landscape and with the round-headed form of our ordinary deciduous trees. It is also best adapted to the hot summers, that render high, airy rooms, balconies and verandahs so essential to comfort and health.

2. We should set apart for ornamental purposes a generous breadth of ground. Five or ten acres would be better than less. This should surround the dwelling in every direction, if practicable, but especially upon the sides of the principal outlook, which will generally be from the rooms most occupied by the family. As much natural variation of surface as can be had, should be sought, in choosing these ornamental grounds, as this will add much to their pleasing effect; without cost. The ground should be well plowed and be put in fine and deep tilth before planting. To such extent as practicable it is better to plant it all in the same year, as the conditions and culture of a large lot of trees will be better looked after than those of a few.

For the purposes of plantation the trees and shrubs should have been obtained, as young plants, in quantity, two or three years before, and have been cultivated in nursery rows until of a proper size. They can then be rapidly transferred, with small loss, from the nursery to the plantation. The following would be a good list to choose from, looking to beauty of form, and foliage, and hardiness, and health of plant, as well as ultimate utility as timber; which last point should not be entirely disregarded in economical landscape gardening: White Ash, Catalpa, Cypress, White Elm, European Larch, Sugar Maple, White Oak, Burr Oak, Tulip Tree, White Hickory, Black Walnut, Butternut, of deciduous trees; and Norway Spruce, White Pine, Scotch Pine and Red Cedar, among Evergreens.

This list may be largely increased with advantage by the addition of trees of less general value but great beauty, and of such hardy and handsome shrubs as the Altheas, Dogwood, Lilacs, Spruces, Syringas, Weigelas and Mahonia.

Taking the wholesale list of one of our leading nurserymen, I find that young trees may be purchased at the following rates:

100	White Ash, 1 to 2 feet	$2 00
100	Catalpa, 1 to 2 feet	3 00
100	Cypress, 2 to 3 feet	8 00
100	White Elm, 1 to 2 feet	1 00
100	European Larch, 1 to 2 feet	8 00
100	Sugar Maple, 1 to 2 feet	6 00
100	White Oak, 1 to 2 feet	10 00
100	Burr Oak, 1 to 2 feet	10 00
100	Tulip Tree, 1 to 2 feet	8 00
100	Black Walnut, 1 to 3 feet	8 00
100	Norway Spruce, 9 to 12 inches	4 00
100	White Pine, 9 to 12 inches	6 00
100	Scotch Pine, 9 to 12 inches	6 00
100	Red Cedar, 12 to 18 inches	8 00
1400	trees (14 species) for	$83 00

This bill will give some idea of the outlay required for quite a commencement in tree growing. All these species make trees of tolerable, many of them of very pleasing appearance, and all, excepting the White Elm, are quite valuable for timber.

By the time trees of these sizes have been well cultivated for two or three years in nursery rows, planted at good distances apart, and without much pruning, so as to give full development to the lateral limbs, and help them, when transplanted, to branch from the ground, they will be ready for planting in the ornamental grounds.

Being now ready to plant, let us lay down some very general rules that should be observed in all ornamental planting, such as I suppose our Illinois farmers require.

1. As a rule, the evergreen trees and deciduous trees should appear in about the same proportions in the various parts of the grounds, in order that the effect of the former in the winter landscape may be taken advantage of. An exception to this is, that, for the purpose of shelter, more evergreen trees should be planted on the we stand north of the dwelling and other buildings, than elsewhere.

2. Near the house only herbaceous plants and small shrubs should be planted. These should occupy the borders of walks or drives needed for gaining access to the house or adjoining buildings, or regular or irregular beds made for the purpose in the adjoining grounds. As a rule, however, the borders of needed walks will furnish room for as many plants of these kinds as can be satisfactorily taken care of. But no trees that ultimately reach a large size should be planted near the house. They may shade the house, or the ground near it, too much, and cause decay in the wood-work, and, perhaps, sickness among the inmates, and obstruct the air and out-look.

3. Trees should be planted more sparsely near the house, and increase in numbers and groups as the ground recedes. This is carrying out the idea already mentioned still further, and is essential to securing a proper breadth and cheerfulness of view.

4. In the same connection, it should be stated that the house, being the principal "point of vision," we should be able to see from all of its principal windows, or other out-looks, opening vistas towards the more pleasing scenes in the surrounding landscape. Thus, in a sense, the grounds might be regarded as cut up into a series of angles, converging in or about the residence, some of which would be planted to conceal unseemly points in the landscape, and others left open to admit pleasing views of broad lawns within and fields beyond.

5. Room should be left for necessary drives, but, except in those of very frequent use, it is not best to attempt making a formal carriage road by excavation and filling with macadam or gravel. The farmer has, generally, neither the means nor time to spend in this way, and for nearly every purpose a road-way made with the plow and scraper, and then seeded with blue grass, will be as clean, dry and easily kept as could be desired.

6. Straight lines of trees, and hedge rows and fences, are to be avoided: and when not to be avoided, should be broken and masked by planting groups of trees here and there along them, where they are unpleasantly conspicuous.

7. For grouping, round-headed and deciduous trees are preferable to fastigiate, conical and evergreen trees. The latter, as a rule, look best as single formal specimens. For this reason, perhaps, many of them seem more suitable as adjuncts to the dwelling, with whose formal architecture they perhaps harmonize better than the more varied shapes of deciduous and round-headed trees.

8. Groups, which I define as irregular clusters of trees, should make up the greater part of the planting, because in this way more open spaces can be left, which are not only pleasing to the eye, but more manageable in cultivation, mowing and raking, whilst the trees in clumps can be made more available for timber purposes from their close planting and consequent upright growth and need of occasional thinning. It is a mooted point, I find, as to whether a given group should be composed of one or several species, or again, of a predominance of one species without the absolute exclusion of others. I incline to the latter view as the course usually pursued by nature, in my observation, although we must not, in an artificial state of things, follow nature too closely. The laws of harmonies and contrasts between

the different shades of foliage, early, summer and autumn, of blossoms with foliage in their season, and of young woods, such as the shoots of the Golden Willow, Dogwood, etc., are not clearly defined, and perhaps cannot be, to any great extent. Several instances of contrast and harmony, however, have been suggested. Thus, Kemp suggests that plants with pinnated leaves, or extremely small or pale green or silvery foliage, or slender or weeping branches, such as the Ash, Deciduous Cypress and European Larch, are adapted for contrasting with dark and leavy-foliaged Evergreens, such as Cedars and Pines. Copeland cites the special case of the Red Maple, planted against the White Pine as a back ground, as showing forth its red blossoms in spring, and the gold and red of its autumn foliage against the dark green of the pine, most wonderfully. The nicer point, however, would be to determine some of the better associations of foliage. We know that a great beauty of the common Locust consists in the contrast of its different aged growth of leaves, varying from dark to an almost yellowish-green; and this is identical, probably, with that suggested by Kemp, just mentioned. Smith gives a list of trees, based on the shades of green in their foliage, and adds a few more special cases without attempting to give a rule. Thus, he says: "Some prominent points may be brought out by a dark, others by a light or silvery-green. The effect of distance, too, may be produced, or increased, by employing dark green in the foreground, and shading off with lighter colors in the more remote objects."

Probably all we can conclude from these instances is, that there is something pleasing in the contrasted shades of green. At any rate it may be suggestive to take up our list of trees, and see what their summer and autumn colors may be:

Name.	Summer color.	Autumn color.
White Ash	Light green	Brownish-purple
Catalpa	"	
Cypress	"	Yellow
European Larch	"	"
White Elm	Green	"
White Oak	"	Reddish-brown
Burr Oak	"	"
Sugar Maple	"	Crimson
White Hickory	Dark green	Yellow
Black Walnut	"	"
Butternut	"	"
Tulip Tree	" ?	
White Pine	Pale green	
Scotch Pine	Bluish-green	
Norway Spruce	Dark green	
Red Cedar	Brownish-green	

Whilst the trees are still standing in the nursery the contrasts that these furnish may be studied, and grouping determined upon so far as affected by colors of foliage. As to the contrasts of hights, the advantages or disadvantages of showing the stem of a tree, or covering it with its own branches, or with shrubbery planted about these, are niceties with which I will not now attempt to deal.

The places of the individual trees having been predetermined by stakes, planting can go on rapidly in well plowed land. These stakes should, of course, be placed with great care, and upon each should be written the name of the particular kind of tree that is to be planted where it stands. The trees, I may add, should be planted pretty thickly in the groups, say four feet apart, and can be thinned, from time to time, by transplanting, as required. The field itself should be cultivated in corn, or other plowed or hoed crop, until the trees are well established, in such way as to secure clean culture even among the groups. At the end of that time the ground should be well plowed, and made very smooth, and seeded to blue grass and white clover. A timely use of the mower, and an occasional top-dressing of manure, will be about all the additional expense, and this will be in at least good part repaid by the hay and pasturage, ultimately.

I have endeavored, in what I have written, to give some practical hints, but hardly a complete treatise, on landscape gardening in its adaptation to the wants of our Prairie State. More might well be said, of greater or less pertinence, in regard to a system or ornamentation which should extend not only over a few acres about the homestead, but throughout the farm, and make it a veritable *ferme ornee.* I have thought of pleasant, winding, sheltered ways that I could make down through certain young forest growths of my own, with a little planting of an evergreen here and a group there, and leading into the highways beyond, by the pleasantest of private roads. I have meditated on eminences that should be glorified with a crown of green and scarlet maples: and white blossomed thorns, that should be dug about and dressed until they bloomed with even more than their native vigor. But, alas! I find that money, or its equivalent, time, is absorbed in other and more necessitous ways; and I conclude that, for the present, the farmer cannot be persuaded to work to aesthetic ends much beyond the sound of the voices of wife and children standing on the threshold of his home. But it is no slight thing that so many will now do this, and that, year by year, the prairie homes of Illinois are more embowered in blossoming Apple and overshadowing Elm.

Through glowing orchards forth they peep,
  Each from its nook of leaves;
And fearless there the lowly sleep,
  As the bird beneath their eaves.

* * * * * * *

And green forever be the groves,
  And bright the flowery sod,
Where first the child's glad spirit loves
  Its country and its God.

ON THE MANUFACTURE OF SOAP.

BY JAMES T. DWYER, SPRINGFIELD.

Soap is a chemical compound of oils and fatty substances, with pot ash or soda, prepared for the purpose of washing and cleansing linens, cottons and woolens, and for personal use.

It is unknown at what period in the history of the human race it was first used—the Egyptians, who were highly civilized, not appearing to have had any knowledge of its preparation, although apparently well acquainted with the nature of alkaline detergents or cleansing bodies; and the passages of the old Testament:

> "Though thou wash thee with nitre, and take thee much soap."—*Jeremiah*, 2: 22.
>
> "For he is like a refined fire, and like a fuller's soap."—*Malachia*, 111: 2.
>
> "As he that taketh away a garment in cold weather, and as vinegar upon nitre, so is he that singeth songs to a heavy heart."—*Prov.*, 25: 20.

—Do not appear to have reference to any other material for washing and cleansing than some one of the alkalies, or some plant or native earth, used freely by the Jews, in lieu of the more suitable and modern article of soap.

The Greeks and Romans were undoubtedly well acquainted with the properties of soda and other substances for washing and cleansing But to the Gauls, after the conquest of their country and its becoming. part of the Roman Empire, were the Romans indebted for its introduction. Pliny, in referring to it, says, that "the Gauls made a mixture of goat's fat and ashes, which was used by the Roman ladies." Subsequently, and in a very short time, the Romans undoubtedly acquired a complete knowledge of its properties, and of the materials and of the manner of making it successfully—a complete soap maker's establishment, with vats built of brick and cemented inside, some of the utensils, and some of the raw materials, and a quantity of soap in a state of preservation, being found in the excavations made in the ruins of Pompeii; this Roman soap maker bringing on the soponification by the application of lime, as evidently shown by the materials found.

Since that time it has become indispensable to the requirements of civilization, and has undoubtedly contributed as much, if not more, to the comfort, cleanliness and happiness of all the nations of the earth familiar with its properties, as any other substance within the range of the necessaries and comforts of life.

Leibig, in his letters on chemistry, says: "Soap is a measure of the prosperity and civilization of a people."

There are various vegetable and earthy substances which have been and are yet used for washing and cleansing, besides the coarse soaps of general utility and the finer soap made exclusively for toilet use. The milk of the Cassaiva, or tree from which tapioca is made, is poisonous, and has to be pressed and washed out of the roots before their conversion into edible food; pos sesses the property of a powerful washing fluid, which the natives of Brazil avail themselves of at the right season, by giving their persons a general and thorough cleansing in the streams and water courses into which this milky substance passes, during the purification of the fiber.

The cleansing properties of pipe-clay have been familiar, for many ages, to the manufacturer of woolen fabrics, whilst in the course of preparation for market—it being the best and the cheapest material that can be procured for this purpose; and other earthy bodies are constantly made use of for other manufacturing cleansers of grease and dirt in all its forms. But it is to the "Alkalies," and their valuable combinations with animal and vegetable oils and fats, in the form of our modern domestic washing soaps and the soaps of commerce, that we are exclusively indebted for the principal and exhaustless supplies of this invaluable substance.

Soap, but of different qualities, can be made out of almost any vegetable oil or animal oil or fat, and few occupations, within the whole range of the industrial arts, requires more practical experience, sound judgment and well applied science than the conducting and management of a profitable soap-boiling factory. At the same time, however annoying the surroundings of such an establishment may be to our feelings and senses, it must be admitted that it is one of the wonders of science and modern chemistry that these offensive materials can be converted into such a valuable, and, in some cases, beautiful product, merely by mixing fat and alkalies, in the proper proportions, and exposing them to the action of fire, until this wonderful change has taken place in their composition.

The word "alkali" is of Moorish origin. The Moors introduced the culture into Spain of the "sal-soda" plant, from which "barilla" is made, giving it the name, "Kali," to which is added the Arabic prefix, "al," making the modern well known word alkali, abbreviated by using the word "lye."

There are but four alkalies in nature—three of which only are in general use—the mineral alkali, soda—the vegetable alkali, potash—and the volatile alkali, ammonia—soda and potash being only used in the making of soap. Soda being used for making hard soaps, seen in bars and cakes, and potash in making our common soft soap, the soft soaps used in manufacturing, and the beautiful soft soaps of the toilet. Ammonia, when applied with water, is a powerful cleanser, but it is never placed in combination with oils or fatty substances, unless in the form of liniments used in the practice of medicine. Ammonia, when active, is really a gas, so that it would be impossible to make it unite with fatty bodies in kettles placed over fires, as it commences evaporating rapidly immediately on exposure to the air, and has to be always carefully confined. It has, however, become of immense importance in the arts and manufactures, and is one of the principal ingredients in certain manures—natural and artificial—it being essential to the existance of vegetation at some stages of its growth.

SODA OR MINERAL ALKILI.

Until within a few years the supply of soda, for all purposes of art and manufacture, depended on the natron beds of Egypt and Hungary, and on the growth and preparation of the sal-soda plant in Spain and the Canary Isles and other places. This plant, which is cultivated on the sea-shore—where the fields can be flooded with sea water when desirable, dams and flood-gates being constructed for that purpose—on being dried and burnt in rude furnaces, so as to partly fuse the ashes, concrete into a hard, cellular, grayish mass, having very much the appearance of a spongy stone that has been exposed to the action of fire—this residue being the "barilla" of the soap makers—and having special properties, in its affinity for oils and fats, that are not possessed by soda in its purer condition. It is the common carbonate of soda, and is almost exclusively used for making soap—England and France drawing their supplies from Spain, and the United States drawing its supplies from the Canary Islands.

Sea-weed also produces carbonate of soda and potash, after passing through the same process of drying, burning and partial fusion. The product is known in market as "kelp." The percentage of soda is so small in kelp, that its production has been abandoned on the coasts of Ireland, Scotland and the Orkney Islands, where it was made in considerable quantities until superceded by cheaper and better carbonates of soda made, by chemical and scientific processes, out of other substances.

When natural soda is found on the surface of the earth, it is known to the trade by the name of Natron. Natron is found in four places in Egypt, in Hungary, Mexico, and no doubt immense deposits of natron or natural soda exist along the whole line of country lying at the base of the Rocky Mountains, and which, at some future day, will be utilized and furnish the American market with all the carbonate of soda that she demands.

But the great and inexhaustible supply of soda is at present made from common salt, or chloride of sodium, or from muriate of soda, the fossil salt found in immense beds in England, Hungary, Prussia and the United States.

Another substance, hitherto considered worthless, is now converted by the skill of the chemist into soda and other valuable products. This is the mineral found in great quantities in the State of Missouri and elsewhere, and known to the mineralogist as "Pyrites of Iron." English capitalists have examined the Missouri deposits, and are to erect works suitable for its conversion into soda, and other commercial bodies.

POTASH OR VEGETABLE ALKALI.

We are all more or less familiar with the simple process of making vegetable alkali or lye, from the ashes of such hard woods as are usually burned in our fire places and ordinary stoves. Almost every farmer's house where wood is burned, has its ash-hopper, or should have it, into which hopper the ashes is put. Water is poured on this ashes from time to time. It should be always soft water, if it can be procured. This water percolates or seeps through the ashes, separating in its progress the alkali contained in the solid part of the ashes, and the fluid secured at the bottom of the hopper is the "lye" used by our farmers' wives for the conversion of grease and fat into the soft soaps used almost by every farmer's wife all over the timbered regions of North America. The potash of commerce passes through precisely the same process, only on a large scale, in the course of preparation for market; and to convert it into potash, it is boiled, strained and evaporated to dryness, in iron pots, and is the potash or black ash of North America and Russia.

To convert potash into pearlash, it is placed in a furnace and submitted to intense heat, with a current of air flowing over it. Thus heated and exposed to the atmosphere for some time, it assumes a pearly whiteness, and has been by this process converted into the pearlash of the merchant.

Potash being the product of vegetable bodies, and the supplies coming from the timbered districts of Canada, the United States and Russia, serious apprehensions were for a long time entertained that this valuable substance would, at no very distant day, entirely fail, and that plants yielding potash liberally would have to be cultivated for the purposes of consumption required in a variety of the useful arts and manufactures. But, fortunately, no such apprehensions of a deficiency in the supply of potash need be felt, as nature, aided by science and chemistry, has come to our assistance, and promises to furnish this article in any quantity that may be required.

In the salt mines of Stassfurt, in Prussia, there is a peculiar formation of fossil or rock salt, which the proprietors of the mines have until recently regarded with aversion, the salt made from it being bad and unmerchantable. Professor Rose, of Berlin, examined this body, and, after careful analysis, pronounced the obnoxious compound to be potash. He called the attention of the Prussian government to this discovery. Works for separating the potash from the other substances were immediately erected, and at present the quantity of potash combined with this fossil salt in those mines is estimated at six millions of tons, and fresh borings indicate that the supply promises to be inexhaustible.

The beet-root sugar factories of France yield twenty-five hundred tons annually. In beet-root sugar making, the inferior molasses of the beet that cannot be converted into refined sugars, is distilled into brandy, which, after distillation, leaves a residue, which is converted into potash.

The grease found in the wool of the merino sheep contains a large percentage of potash—the water in which they are washed, on being boiled down, giving a large supply; and it is estimated that if all the water in which the sheep of France are washed could be secured, the potash it would yield would be sufficient for the consumption of France.

In addition to the soda which is found in sea-weeds, they also yield considerable potash; and one singular fact in connection with the "Sal soda" soda-plant, from which barilla or carbonate of soda is made, is that when the same plant is grown inland, and removed from marine influences, it changes its nature, and produces potash in place of soda.

Nearly all the soda used in the United States is imported from abroad—the supply made in Europe amounting to five hundred thousand tons, against twenty-five thousand tons of potash, annually, showing an immense disproportion in the facilities of production.

Both soda and potash, or the mineral and vegetable alkalies, in addition to their soap-making properties, have many other valuable qualities, both of them being extensively used in the arts, sciences, and for household and domestic purposes, and both of them contributing to the enlightenment and comfort of the human race, as much as any other gifts which Providence has blessed us with. They enter largely into our manufacture of glass and the rectification of spirits, in medicine and dyeing, in the working of metals, in the manufacture of gunpowder, in calico-printing; our bread powders are all made from them; our matches and gun-caps are preparations of them. Common salt, saltpetre and borax are principally made up from them, and the fertility of our soil and the success of our agriculture depends on their presence; and they fill the measure of their usefulness by giving us the next best thing to food, clothing and sleep, and that is our common soap, to surround us with cleanliness, without which we would not be much better, in a moral point of view, than the beasts of the field, or the most uncultivated savages.

HOW THE HARD SOAP OF COMMERCE IS MADE.

Different descriptions of grease are soponified by soda, with different degrees of quality. Amongst the oils, the olive, sweet almond, rapeseed and castor oil; and amongst the solid fats, tallow, lard and lard oil, bone grease and butter, are soponified the most profitably. Coal oil can also be made into soap, but its peculiar smell still clings to it and prevents its from being used as freely as its cheapness would call for. It requires several days to complete the process of making hard soap, and one day more if it contains resin. Formerly the process was to soponify with potash lyes, and the result, a soft soap, was converted into hard soap by the introduction of sea salt, or weak kelp lyes, in sufficient quantity to furnish the proper proportions of soda to give the mass the required solidity and hardness.

Owing to the high price of potash, this system is abandoned, and sodas, which of late years have become abundant and cheap, are used almost exclusively for this purpose. It is, however, well that the process should be properly understood, as the soft soaps made with our potash lyes, can be very readily converted into hard soaps by the introduction of salt or weak soda lyes.

TO MAKE HARD SOAPS.

The raw soda or barilla being ground, or pounded, is placed in a vat in alternate layers with unslacked lime, the bottom layer being lime.

Water is allowed to infiltrate through those layers, and the lye is secured as it trickles through a hole in the bottom of the vat. The lime absorbs the carbonic acid of the soda, making the lye caustic or fit for the soap kettle; and the quantity of lime applied must be in proportion to the quantity of carbonic acid in the soda. The lye is made of different densities: the English soap makers commencing the process of soponification by using the strongest lye first, and gradually reducing the strength of the lye until, in the course of four or five days, the process is completed. The French, on the contrary, reverse the process, using the weak lyes first, and increasing the strength towards the termination of the work. The French process is considered the best, and is recommended by those who claim to be judges.

To every twenty pounds of tallow add one gallon of weak lye, and boil until the lye is spent. The mass must then cool for one hour, the spent lye drawn off, and another gallon of strong lye added; the mixture again boiled until the second dose of lye is spent; and the same process must be repeated for several days, until the mixture, if properly managed, is converted into white tallow soap, which should be allowed to cool gradually and settle, when it is poured into moulds, and when solid it is cut into the bars which are found in our markets. Twenty pounds of tallow ought to make thirty pounds of first quality hard soap, allowing three pounds of soda-ash for every twenty pounds of tallow. The balance of the weight is made up by the large quantity of water which enters into combination with the grease and alkali in the course of soponification.

When yellow or resin soap is required, the hard soap has to be made in the usual manner, and at the last charge of lye, or when the soapy mass ceases to absorb any more lye, one-third the weight of pounded resin is introduced, the mixture constantly stirred and the boil kept up vigorously until the resin has become incorporated with the soap. The whole must stand until it settles, and the soap dipped out. Resin soap, when well made, should be a fine bright color. It dissolves readily in water, and will make a fine lather, even with hard pump water.

HOW TO MAKE SOFT OR POTASH SOAP.

The principal difference between hard and soft soaps is, that three parts of fat affords, in general, fully five parts of hard soda soap; but three parts of fat or oil will afford six to seven parts of potash soap of a moderate consistence. From its cheapness, strength and superior solubility, potash soap is preferred for many purposes, particularly for the scouring of woolens.

The lyes prepared for making soft soaps should be made very strong, and of two densities, and the process of making potash or soft soap differs materially from that of making soda or hard soap. A portion of the oil or fat being placed in the boiling pan and heated to near the boiling point of water, a certain portion of the weaker lye is introduced and the fire kept up so as to bring the mixture to the boiling point; then some more oil and lye are introduced alternately, until the pan is filled. The boiling is continued gently, strong lye being added until the soponification is complete. The fire should then be removed, and some good soap, previously made, added while cooling down, to prevent any change by evaporation.

One pound of oil requires about one-third of a pound of American potash, and will make one and three-quarters to two pounds of well boiled soap, containing about forty per cent. of water. Sixty pounds of lard will make one hundred pounds of first class soft soap by using one can and one-half of concentrated lye, which lye is made from salt and is really a soda lye.

It is much more difficult to make a good soft soap than to make a good hard soda soap, as good soft soap requires to have the appearance of granulation all through, which is very seldom seen in the ordinary soft soap made and used by our housekeepers all over the country.

SOFT TOILET SOAPS.

Some of the choicest of our toilet soaps are the soft soaps or shaving creams and Naples soap. They are made out of hog's lard in the proportion of one pound of lard to one and one-half pint of strong, clear potash lye; boiling must be kept up very gently until finished, when it is perfumed with the oil of bitter almonds.

The hard, toilet soaps are made of tallow, hog's lard, oil of olives, oil of almonds and palm oil. Windsor soap is made of nine parts tallow and one part olive oil; a soap made entirely of oil and soda does not yield as good a lather as when it contains a considerable portion of tallow.

Castile soap is made of olive oil and soda. Long practice and experience of the manufacturer enables the genuine Castile soap to maintain its superiority against all the efforts made to supplant it by imitators in France, England and the United States. There are two kinds of Castile soap: the white and the mottled—the mottled being considered the best.

Great frauds are practiced by soap boilers, owing to the property, possessed by some oils and fats, of taking up a large percentage of water, and thereby adding to the weight without having any substance. Palm oil is one of those cheating oils, and cocoa-nut oil possesses it to such a remarkable degree that there can be seventy per cent. of water extracted, by chemical analysis, out of one hundred pounds of soap, when made from this oil.

Such is the brief sketch of a subject which is almost inexhaustible, and one which should be better understood than it is by the community, but which but few, even of those whose special occupation it has become in life, have any correct practical ideas about, and no scientific knowledge whatever.

Before closing, allow me to say that the claims of "King Money" or "King Cotton," on our homage and affections, are as nothing compared to the allegiance which each and all of us owe to the king that makes the "soap bubbles." He watches over us in our infancy and childhood, encourages us to smile and be happy in the days of blooming youth and ripening years, dignifies us in middle age and fading outlines, adds veneration to our frosty hairs and sinking energies; and when the spirit has left your cold and inanimate body and winged its way to other and happier spheres, where we think no more of wanting his assistance, he forgets you not, but hovers around the bed of death, and gives you his last parting benediction, wreathing you in freshening and fragrant flowers for the everlasting sleep of eternity.

COUNTY AGRICULTURAL ORGANIZATIONS.

[This list is incomplete, many of the local Societies failing to report.—SECRETARY.]

ADAMS COUNTY.

OFFICERS FOR 1871.

President—Robert Rankin, Payson.

Vice Presidents—Joseph Stewart, Quincy; W. H. Wade, La Prairie; Origin Wallace, Clayton.

Secretary—T. Butterworth, Quincy.

Treasurer—Thos. Jasper, Quincy.

Directors—First Ward, Quincy, M. Piggott; Second Ward, Quincy, I. H. Miller; Third Ward, Quincy, Herman Wittee; Fourth Ward, Quincy, D. C. Wood; Fifth Ward, Quincy, W. H. Collins; Sixth Ward, Quincy, J. M. Earel; Lima township, J. W. Forshee; Keene township, Geo. Venter; Houston township, Martin Sherrick; North East township, Lemuel Burke; Clayton township, Henry Craig; Camp Point township; A. R. Wallace; Honey Creek township, James Cofield; Mendon township, Dr. P. Young; Ursa township, W. W. Beam; Ellington township, Samuel Jameson; Gilmer township, W. T, Yeargen; Columbus township, John Callahan; Concord township, I. W. Anderson; McKee township, E. W. Lierly; Burton township, Geo. W. Deans; Melrose township, James Shinn; Fall Creek township, Ed. Seymore; Payson township, J. W. Vickers; Richfield township, Lewis Boyer; Beverly township, A. C. Robinson; Liberty township, Maurice Kelly.

Fair held at Quincy, September 4 to 9, 1871. Number of entries, 2210; amount paid as premiums, $6,000.

I inclose you the report of Adams County Agricultural Society, and append the following statistical report of Adams county, from a pamphlet published by the Citizens' Association of Quincy:

The producing power of this section is evidenced in the excellent crops of all cereal grains. Our leading staple is

WHEAT—No better article of which is grown in the country than in this vicinity. The best qualities of winter wheat are produced in Adams county, and the crop is, as a rule, certain and abundant. The bluff lands and the intermediate lands between bluff and bottom, are peculiarly adapted to the culture of winter wheat, and are certain to yield abundant harvests. The price of this grain is well kept up in Quincy, the competition of thirteen flouring mills insuring a good market at all times.

FLOUR.—As might be inferred from the excellent quality of wheat produced, Quincy brands of flour rate high in the larger markets of the country. A reference to the statistical information hereinafter contained, will show the value of this branch of manufactures. The quotations of Quincy flour in the Eastern markets show that it ranks among the first in commercial value.

CORN.—The capacity of the Western soil for the production of this great staple of the country, is so well known, that it is unnecessary to enlarge upon it here. The market in Quincy is good, frequently better than in Chicago or St. Louis; and the consumption and demand for shipment is steadily increasing.

OATS, BARLEY, RYE, and other agricultural products, are marketed in Quincy at rates satisfactory to the producer.

The reports of the Board of Trade of Quincy show that the prices of cereal grains and farm products generally compare favorably with the larger Western markets.

PORK PACKING.

No. of hogs packed during season	53,883
Weight, gross—lbs	15,938,200
Weight, net—lbs	12,906,097
Average weight, gross—lbs	295⅘
Average weight, net—lbs	239½
Total cost, ready for market	$1,131,548

SUMMER PACKING.

No. of hogs packed during season	10,000
Weight, gross—lbs	2,400,000
Weight, net—lbs	1,950,000
Value of product	$170,625

STOCK YARDS.

Receipts by railroad (8,473 *cars*) *and steamboat the past year.*

Head of cattle	125,364
Head of hogs	31,445
Head of sheep	16,224

FLOURING MILLS.

Number	13
Number of employees	156
Bushels of coal consumed	512,000
Bushels of grain used	3,114,560
Value of cooperage used	$277,738
Capital invested	750,000
Barrels of flour manufactured	578,621

STOVE FOUNDRIES.

Number	4
Number of employees	262
Tons of coal and coke consumed	1,200
Tons of iron used	3,000
Capital invested	$320,000
Number of stoves manufactured	30,000
Value of product	$350,000

PAPERS PUBLISHED.

4 dailies, 1 German, with circulation of	4,800
1 tri-weekly, with circulation of	300
5 weeklies, 1 German, with circulation of	10,400
6 monthlies, 1 German, with circulation of	16,800
1 agricultural paper, "Western Agriculturist," with circulation of	500

PUBLIC SCHOOLS.

Number of pupils enrolled		3,000
Average attendance		1,800
School population of the city		10,692
Number of teachers		41
Number of schools		11
School fund—city taxes	$31,909 80	
" State fund	4,868 30	—$36,778 10
Value of school property		306,000
Average expense per scholar		10
Annual disbursements for salaries, etc		30,000

FRUIT.

Sales and shipments per season.

The following we take from the December number of the *Western Agriculturist;*

FRUIT SHIPMENTS.—The apple crop this season, in this part of the West, was very good. In most orchards the yield was better than usual. The shipments this season are large enough to justify the opinion that we are in the midst of a good apple district; and when we come to see the large quantities of small fruit, such as strawberries, raspberries, etc., that were shipped in the early part of the fruit season, then the peaches, and the best grapes by the ton, we very naturally conclude that we are in the centre of a great fruit growing district. The following are the shipments of fruit this season:

Apples, bbls	43,166
Peaches, boxes	40,000
Strawberries, qts	112,000
Raspberries, qts	78,000
Blackberries, qts	75,000
Cherries, qts	65,000
Grapes, tons	500
Pears, bushels	1,000
Plums, bushels	200

NURSERIES.

No. of nurseries in the county	12
No. of employees	200
Capital invested	200,000
Annual sales	150,000

Shade and ornamental trees, annual product	2,000,000
Fruit trees, annual product	1,000,000
Small fruits, annual product	600,000
Osage Orange plants, annual product	10,000,000

The Adams County Horticultural Society is one of the flourishing institutions of our county; has a very large membership; has regular monthly meetings (first Tuesday each month).

The officers for the ensuing year are: John Stewart, Fowler, President; S. B. Turner, Quincy, Vice-President; Thos. Sinnock, Quincy, Treasurer; T. Butterworth, Quincy, Recording Secretary; J. H. Hargiss, Quincy, Corresponding Secretary.

I respectfully submit to you the above report, for your forthcoming State Report.

T. BUTTERWORTH,
Secretary.

BOONE COUNTY.

OFFICERS FOR 1871.

President—John J. Foote, Belvidere.
Vice-President—Henry W. Pier, Belvidere.
Secretary—A. E. Jenner, Belvidere.
Treasurer—D. W. Gates, Belvidere.
Directors—O. S. Cohoon, Flora; Luke Teeple, Belvidere; John Warren, Caledonia; S. A. Ellsworth, Manchester; Geo. Reed, Spring; Alvah Herrington, Bonus; Charles Milliken, Boone; Silas DeMunn LeRoy.

Fair held at Belvidere, September 12 to 15 (inclusive), 1871. Number of entries, 1,022; amount paid as premiums, $951 50.

BUREAU COUNTY.

OFFICERS FOR 1871.

President—A. O. Boggs, Princeton.
Vice-President—Geo. N. Palmer, Princeton.
Secretary—Geo. W. Stone, Princeton.
Treasurer—C. D. Trimble, Princeton.

Directors—Rufus Ford, Buda; P. H. Piper, Princeton; W. S. Evans, Malden; Simon Elliott, Princeton; A. Stevens, Jr., Tiskilwa.

Fair held at Princeton, September 18 to 21, inclusive. Number of entries, 750; amount paid as premiums, $2,750.

The Agricultural Society of Bureau county was organized in 1855. Annual meetings are held on the third Friday in October. Our Fairs are largely attended and usually successful in point of finance and show of stock.

The Society has a Fair Ground of about forty acres, well fenced, with a good half-mile track, good stalls and other improvements, to which we are adding yearly. The total receipts of last Fair were a trifle over $5,000—an increase of about $1,000 over any previous year, and from present indications a further increase may be expected another year.

This county is largely, and may be said to be almost exclusively, an agricultural county. There are a few manufacturing interests which are in a healthy and growing condition, among which are the Princeton Manufacturing Company, who employ a capital of seventy-five thousand dollars in the manufacture of agricultural implements, and are now sending their plows, corn-stalk cutters, cane mills, and various other articles, to all parts of the country.

The establishment of Richards, Vandergriff & Co. manufacture, exclusively, plows. This establishment was commenced by Jas. Vandergriff, about fifteen years ago, who the first year made about a half dozen iron beam plows, they being among the first iron beam manufactured in this country, and are now considered among the best plows in use. This company now turns out about 2,000 plows, which are all made under the immediate supervision of the original inventor and patentee, James Vandergriff.

We have one cheese factory now in operation which is turning out large quantities of cheese, and is found to be a profitable investment.

The total number of acres of land is	574,83
The total number of acres cultivated	205,257
Number acres in wheat cultivated	81,123
Number acres in corn cultivated	130,403
Other crops cultivated	43,731

There is but a small amount of timber in this county. The soil is of deep sandy loam. Crops mostly shipped away to Chicago. Extensive coal mines are worked in south part of the county.

Number horses	19,144
Number cattle	37,411
Number mules	620
Number sheep	5,722
Number hogs	58,201

No disease among stock for the last year.

CASS COUNTY.

OFFICERS FOR 1871.

President—John W. Seaman, Beardstown.

Vice-President—Addison G. Angier, Virginia.

Secretary—Rufus W. Rabourn, Virginia.

Treasurer—Edward T. Oliver, Virginia.

Directors—John Prunty, Robert Hall, William Stevenson, John A. Petefish, Isaac M. Stribling.

Fair held at Virginia, first week in September, 1871. Number of entries, 557; amount paid as premiums, $2,000.

I herewith transmit a list of officers, etc., of our County Fair. Our Society was organized in 1856, in June, and the first exhibition was held in September of the same year. Although our Fairs have not the reputation of being very extensive, we have given universal satisfaction to exhibiters. Our grounds are small, but convenient, and in good repair. We have held our Fairs annually, for sixteen years. Sometimes bad weather has thrown us in arrears, financially, but the succeeding year would probably turn the tide and put us ahead again, and thus we keep going.

Our county is one of the smallest in the State, having a superficial area of about 360 square miles, divided nearly equally in prairie and timber. It is situated in the midst of the great coal measures of Illinois, and is underlaid by coal stratum No. 3, of our State Geologist. The Sangamon river forms the northern boundary of the county, and the Illinois river the western. The "bottoms" of these rivers will average five miles in width, are mostly prairie, with soil of unsurpassed fertility, and only to a limited extent subject to annual overflow. Along the bluffs, for a few miles, is a timbered, hilly region, known as "the barrens," and all along the southern boundary of the county is the timber of Indian creek. The central and eastern portions are open prairie, in a high state of cultivation throughout its whole extent.

Cass is a county of rich soil, and is very productive. The chief crop is corn, which is fed to cattle and hogs at home. The cereals are not produced for export, though the soil is remarkably well adapted for their growth. Tame grass is an important feature of our agricultural wealth, and grazing one of the most profitable interests. The principal business of our farmers is fattening cattle and hogs for the Eastern markets. In the fall, cattle are purchased in the States west of the Mississippi, and brought here to consume the crops of corn during the winter; and again, in the spring, cattle are imported to consume the grass on the pastures. It was estimated that in the year 1870 the farmers of this county had two and a half millions of dollars invested in cattle and hogs; but, owing to the depression in Eastern markets, the amount invested is 1871 is not so great.

This year Cass will export fifty thousand bushels of wheat, and two hundred and fifty thousand bushels of corn: having had fifty thousand acres planted in corn, and four thousand in wheat and other cereals. This year all live stock in Cass county has been remarkably free from disease, and no fatal epidemic has prevailed here for some years. Many of our farmers have latterly turned their attention to introducing and raising blooded cattle, hogs, horses, and sheep; and their experiments, thus far, have been attended with results very encouraging and gratifying. All the fruits of this latitude flourish well, and grape culture is gaining much prominence with a large class of farmers. The vintage of this county will this year reach 3,500 gallons, none of which will be exported. Cass county is abundantly supplied with facilities for transporting its products to market; as, besides its two rivers, there are three railroads traversing it north and south—one on its eastern border, one through its center, and one through its western portion, and one running through its center from east to west. The principal towns in Cass are: Beardstown, on the Illinois river; Virginia, in the center; Chandlerville, on the Sangamon river; Arenzville, on Indian creek; and Ashland, in the southeast corner.

The wonderful productiveness of the soil and remunerative values of all farm products, have made agriculture the leading interest, to the exclusion of manufacturing enterprises; yet the latter are not wholly neglected. In different parts of the county are fine flouring mills, breweries, machine shops, planing mills, woolen mills, etc,

Manufacturing is yet in its incipiency here, and will, in time, demand more attention, and call for the investment of the rapidly accunulating wealth of the county; for all the facilities for manufacturing are here, including fuel, water, transportation and proximity of markets.

Our farms are too large to be well cultivated. Some of them are six hundred acre farms; and such are certainly neglected in many respects. My suggestion would be, to divide such a farm into about three farms, and then tend it well, with a variety of cereals, fruits, vegetables, etc. Such a movement would increase our population, make the yield of the soil more abundant, and of a greater variety. Our Agricultural Society, hold their annual election in March, the result of which I will inform you.

R. W. RABOURN,
Secretary.

CHRISTIAN COUNTY.

OFFICERS FOR 1871.

President—W. T. Baker, Grove City.
Vice-President—Eli Porter, Grove City.
Corresponding Secretary—Wm. A. Goodrich, Taylorville.
Recording Secretary—Andrew Simpson, Taylorville.
Treasurer—Wm. Anderson, Taylorville.
Directors—W. T. Baker, Eli Porter, A. D. Northcut, A. Simpson.

Fair held at Taylorville, September 19, 20, 21 and 22, 1871. Number of entries 600; amount paid as premiums, $1000.

W. T. BAKER.

COOK COUNTY.

OFFICERS FOR 1871.

President—Elias A. Thomas, Desplaines.
Vice-President—H. N. F. Lewis, Chicago.
Corresponding and Recording Secretary—Jas. F. Bradley, Desplaines.
Treasurer—S. A. Briggs, Chicago.
Directors—Alfred Parsons, Willet Dorland, E. A. Thomas, M. Dunne, I. N. W. Sherman.

Your circular of November 10th is duly received. Our agricultural society was organized, under a general law of the State, last summer; is a stock company. We have purchased forty acres of land near the Northwestern Railway, at Desplaines, inclosed it with a tight board fence, nine feet high, and graded a half mile track, fifty feet wide. Location about sixteen miles from Chicago. Our association is not bounded by county lines, but for the Northwest.

Our farm products are milk for the Chicago market, fruit, vegetables and grain. Manufacturing mostly confined to Chicago. There are no diseases of contagion among domestic animals in this region.

Being near Chicago, our history is closely connected with it. Its growth and destruction are among the wonders of the world. The rapid increase in value of real estate, and business prospects, are the greatest attractions to enterprise and wealth.

We hope to be in readiness for a Fair next year. Our books and many valuable papers were burned in the great fire in Chicago. The election of officers is on the first Saturday of December, annually.

ELIAS A. THOMAS,
President.

CRAWFORD COUNTY.

OFFICERS FOR 1871.

President—James S. Kirk, Robinson.

Vice-Presidents—James Lamb, Annapolis; I. D. Walsh, Palestine; S. H. Brigham, Robinson.

Corresponding Secretary—George N. Parker, Robinson.

Recording Secretary—Guy S. Alexander, Robinson.

Treasurer—Wm. Parker, Robinson.

Fair held at Robinson, October 3, 4, 5 and 6, 1871. Number of entries 423; amount paid as premiums, $728.

The Society was organized in March, 1856. Is liberally patronized. Have grounds covering twenty acres, with race course, amphitheater, etc.

GUY S. ALEXANDER,
Secretary.

DE KALB COUNTY.

OFFICERS FOR 1871.

President—E. Noble, De Kalb.

Vice-President—Thos. Smith, Creston.

Secretary—D. C. Needham, De Kalb.

Treasurer—James S. Russell, De Kalb.

Directors—Thos. Smith, Creston; J. D. Butts, E. A. Barnes, E. S. Perry, J. S. Russell, De Kalb.

Fair held at De Kalb, September 26, 27, 28 and 29, 1871. Number of entries about 3000; amount paid as premiums, $1250.

The De Kalb County Agricultural and Mechanical Society held its eleventh annual fair September 26 to 29, 1871, and is now in a prosperous condition. It holds unincumbered real estate valued at $5000. It paid all premiums at presentation of vouchers this year, and has paid off all old indebtedness.

This county had, in 1870, a population of 23,275. Its soil is rich and deep. It is a broad prairie, skirted along the streams with timber. It contains eighteen townships—six hundred and forty-eight square miles. There is about 160,000 acres under cultivation, about one-half of which is corn, the other in small grain, principally oats and barley; but little wheat is raised. There are some 25,000 hogs, 20,000 sheep, 33,000 head of cattle, and 15,000 horses, in the county. The prominent cities and towns are De Kalb, situated in the center of the county, on the California line of the Chicago and Northwestern Railroad, fifty-eight miles west from Chicago; population about 2,000. Sycamore, the county seat, is situated about five miles north from the above railroad, and about the same distance east of the center of the county; it is a flourishing young city, of about 2,000 inhabitants. Sandwich is about the same size, is in the extreme southeast corner of the county, situated on the C., B. & Q. R. R.; it is an enterprising place. The villages of Malta and Cortland are situated on the C. & N. W. R. R., and are good grain markets. There are three railroads runnings through the county: the C. & N. W. R. R., the C., B. & Q. R. R., and the Chicago & Iowa R. R. The last named is a new road, running through the center of the south half of the county, on which are springing up a number of small villages.

D. C. NEEDHAM,
Secretary.

OFFICERS OF THE UNION AGRICULTURAL INSTITUTE FOR 1871-72.

President—William L. F. Jones.

Vice-President—David E. Harmon.

Treasurer—George W. Culver.

Secretary—Nathan E. Ballou.

Directors—H. F. Winchester, H. W. Sweetland, A. L. Gage, Geo. Bark, S. D. Coleman.

This Institute is located at Sandwich. It is a stock association, organized for the advancement of Agriculture and Horticulture and the promotion of the Mechanic Arts.

It was organized March 28, 1861, conformable with the laws of the State of Illinois, under the "General Incorporation Act," agreeable to Session Laws of 1855.

Pursuant to a notice published, for three weeks, in the Sandwich (De Kalb county) *Prairie Home and Advertiser*, the term of notice required by the statutes, the following named corporators, to-wit: Wm. L. F. Jones, H. F. Winchester, Hubbard Latham, A. H. Palmer, A. R. Patten, and Nathan E. Ballou—met at the county clerk's room, in the Court House, at Sycamore, De Kalb county, Illinois, on the 28th day of March, 1861.

William L. F. Jones was elected Chairman, *pro tem.*, and N. E. Ballou elected Secretary, *pro tem.*

A constitution having been prepared and submitted, on motion of A. H. Palmer, it was unanimously adopted as the organic law of the "Union Agricultural Institute," the society to be known by the above appellation, to be located at Sandwich, in the county above named.

On motion of A. H. Palmer, W. L. F. Jones was elected President for one year.

On motion of Hubbard Latham, James H. Farman was elected Vice President for one year.

On motion of H. F. Winchester, N. E. Ballou was elected Recording Secretary for one year.

On motion of A. H. Palmer, Jonathan Abel was elected Corresponding Secretary for one year.

On motion of H. F. Winchester, Geo. W. Culver was elected Treasurer for one year.

On motion of A. H. Palmer, H. F. Winchester, C. H. Le Barron, Andrew Brodie and Hubbard Latham were elected Directors for one year.

CONSTITUTION.

ART. 1. This association shall be called the "Union Agricultural Institute."

ART. 2. This association shall be located at Sandwich.

ART. 3. This association shall have for its object the dissemination of all useful knowledge scientifically applied to Agriculture, Horticulture, and the Mechanic Arts, and the best means of promoting all industrial pursuits.

ART. 4. The officers of this association shall consist of a President, Vice-President, Recording and Corresponding Secretaries, a Treasurer and five Directors.

ART. 5. The officers of this association shall hold their offices respectively for one year, or until their successors are elected, and have entered upon their respective duties.

ART. 6. It shall be the duty of the President, or, in his absence, the Vice-President, to preside at all meetings of the association, to keep order, and to enforce all of its rules and regulations.

ART. 7. The Recording Secretary shall keep a faithful record of the proceedings of the association, in a book or books, furnished him for that purpose, and shall attend, with his records and papers, all regular meetings of the association, and its annual Fair.

ART. 8. The Corresponding Secretary shall receive and answer all communications addressed to the association, and lay before the President all communications which he may have received relative to the association.

ART. 9. The Treasurer shall keep all moneys and effects intrusted to him, and shall account to the Directors at all times, when required to do so, for the same; and, if required, he shall execute a bond, to be approved by the Directors, for the faithful performance of his duties.

ART. 10. The Directors shall have the general direction of the affairs of the association, and in the name of said association, and by its authority, shall have power to select, purchase, and to hold in trust, for said association, suitable lands (not exceeding one hundred acres) on which shall be held its annual Fairs and Exhibitions. And it shall further be the duty of the Directors to improve said lands, and to erect suitable buildings thereon, to designate premiums to be awarded at the Annual Fairs, and to perform such other duties as usually belong to such Directors.

ART. 11. There shall be held an annual meeting of this association on the last Saturday of October, in each year. Three weeks before each meeting the Secretary shall give notice thereof in the newspaper of the village.

Art. 12. The capital stock of this association shall be divided into shares of five dollars each, and, at all elections held by the association, each member of the same, or his or her representatives, shall be entitled to cast one vote for each share held by him or her, and the voting may be in person or by proxy.

Art. 13. Any person may become a member of this association by subscribing his or her name to the constitution, and by paying into the treasury the sum of five dollars; and upon the payment of said sum of money the said person shall be entitled to a certificate of stock, said stock to be transferable.

Art. 14. No stockholder shall be entitled to any privileges over those who are not stockholders, in competing for premiums, or in entering upon the fair grounds.

Art. 15. This constitution may be altered or amended, by a two-thirds vote of the stockholders present at any annual meeting.

In the organization of the Union Agricultural Institute, there was a felt necessity on the part of agriculturists in this vicinity, on account of the remote locations of the De Kalb County Agricultural Society, as well as that of La Salle county. At the time of our organization, in 1861, there were but two societies to satisfy the demands of fifty-two townships, or for nineteen hundred square miles of territory, both places of holding Fairs being too remote from our locality to think of driving stock, or of carrying valuable articles for exhibition. We, from these reasons, organized an Agricultural Society upon the basis set forth in a history of the origin and inception of the society, and have been in successful operation for eleven years, having had ten annual exhibitions, which we think have enhanced the interests of agriculture and kindred occupations. During these years we have purchased and beautified a lot of twenty acres, in a timber belt, three-fourths of a mile from the village, where now we have every appurtenance for holding successful exhibitions, second to no institution of the kind in the State. From the extent of country which has become tributary to our annual Fairs, perhaps an area of not less than three hundred square miles, our exhibitions have an importance co-equal, if not, in many cases, superior, to most exhibitions of the kind within the boundaries of the State. On an average, in looking over the treasurer's reports for ten annual exhibitions, we have paid something more than $800, at each Fair, in premiums. We have always paid every dollar awarded; for we have had not only a desire to do so, but the ability, with funds on hand always for any needed repair or improvement. Our entries, many years, amount, in the aggregate, to one thousand, and attendance three to five thousand.

The annual Fair of 1871, perhaps, was superior to any former one of the association. All of the departments were well represented, and receipts more than sufficient to satisfy all claims. The exhibition of stock was very superior. The display of horses would not have been discreditable to Fairs of higher pretensions. Cattle were fine, showing improvement from year to year. Swine was one of the great attractions of the Fair, there being fine herds from Messrs. Henning, McCleery, Potter, and other large breeders of swine. We may enumerate the Poland-Chinas, the Chester Whites, the Berkshires, and crosses of all these breeds. The Berkshires were superior in form, but it is quite likely that the Polands are the breed for packers. There were on exhibition the finest Sheep ever exhibited—a late importation of long-wooled sheep, Leicestershires, from England, that attracted much attention. They were exhibited by Mr. Arnold, an Englishman, who has removed to our county and engaged largely in stock-raising in all its branches. The exhibition abounded in fine cereals, in many varieties of Illinois corn, and the fruit stands displayed the largest show of fruit ever exhibited in this portion of the State, embracing Pears, Apples, Plums, Peaches, and Grapes, equal to the display of many State Fairs. Of Apples, there were many that fruit-growers once dispaired of ever raising. Of Pears, one exhibiter had twenty fine varieties, rivaling the far-famed Pears of California. Floral Hall is always the chief attractions of a Fair, but ours resembled an oriental bazar, filled as it was with the choicest gifts of Pomona; articles fabricated by nimble fingers in the domestic workshop—skilled labor of the family circle—exhibiting the industry as well as the ingenuity of housekeepers in shaping the thousand-and-one articles for our comfort, our well being and our happiness.

Farm machinery was exhibited in great variety. We are greatly indebted to skilled labor in the production of the various machines brought into requisition by an improved husbandry. The far-famed Adams' Power Sheller was here; and where is it not? It has nearly encompassed the world as a labor-saving implement—at least so much of it as is capable of producing corn. Wind-mills of every variety, making the zephyrs contribute to the abridgement of toil. Threshers, Mowers and Reapers, and machines as numerous as the variety of labor requisite to run a farm, only requiring the superintending agency of man, to subdue nature and oblige her to yield her stores of abeyant wealth.

NAHUM E. BALLOU,
Secretary.

DE WITT COUNTY.

OFFICERS FOR 1871.

President—Absalom C. Funk, Heyworth.

Vice-President—W. W. Graham, Clinton.

Secretary—Edwin Weld, Clinton.

Treasurer—Smith Minturn, Clinton.

Directors—Amos Weedman, Dan'l Fuller, Parker Gardnier, Wm. Wright, Thos. Taylor, John McMillan, Ross Mitchell, Geo. Armstrong, Sam'l Trego, John A. Phares, Wm. G. Shaw.

Fair held at Clinton, September 19, 20, 21 and 22, 1871. Number of entries, 900; amount paid as premiums, $1,400. Annual meeting first Saturday in January.

DeWitt county, lying near the center of the State, is one of the best in the State for farming purposes. The prairie is mostly rolling, and of superior quality. Salt Creek, which runs through the entire length of the county, is fringed on either side with timber, which furnishes wood in abundance and material for fencing. It contains thirteen townships, and is under township organization. The land is now about all improved. The Illinois Central Railroad Company have now sold all their land at prices ranging from nine to twenty dollars per acre. The last government land was sold in 1857. Land is selling now at from twenty to seventy-five dollars per acre, according to location and improvements. The area of timber is about one-fifth of the county; varieties mostly oak, walnut and hickory. Coal underlies the whole county, and is about being mined by the railroad company.

The DeWitt County Agricultural and Mechanical Society was organized at Clinton, the county seat, in 1856, and has held annual Fairs since that time. The first purchase for Fair ground was five acres, which proving insufficient for the convenience of the Society, in 1865, it was sold, and a lot of twenty acres was purchased, which is now fenced around with a suitable fence, has a fine half-mile track, spacious amphitheater, and all other buildings and stalls suitable for a first-class establishment. On this the Society now owe a debt of $2,500.

The principal crop of the county is corn, for which the land is well adapted. Wheat, oats, barley, and the grasses, do well. The majority of the corn crop is fed to stock, which business forms one of the most important branches of industry.

For fruit the climate is well adapted. Apples, Grapes, and the different kinds of berries are a sure and paying crop. Peaches are sometimes injured by the winter.

Our facilities for market are now unusually good, having the Illinois Central Railroad running through from north to south, and the Gilman, Clinton and Springfield, from east to west, crossing at Clinton. Buyers of all kinds of stock and produce are plenty at every station, and the farmer finds no trouble in disposing of his crop at a fair price, according to market value.

Manufactures are as yet in their infancy, there being none of any importance in the county. Salt Creek affords several water privileges, but not of the first-class.

The climate is healthy, and improving as the land is better cultivated. The educational advantages of the county are good, and improving yearly.

Clinton, which contains about 2,000 inhabitants, is second to no city of its size in the State for its schools and churches.

EDWIN WELD,
Secretary.

Du PAGE COUNTY.

OFFICERS FOR 1871.

President—W. K. Patrick, Lombard.

Vice-Presidents—O. C. Stough, Hinsdale; A. Kershaw, Wayne.

Secretary—P. W. Stacy, Danby.

Treasurer—A. D. Kelley, Wheaton.

Directors—Consists of two from each township.

Fair held at Wheaton, September 25, 26 and 27, 1871. Number of entries larger than usual, but owing to bad weather, receipts unusually small. Owing to the county seat troubles, it is exceedingly hard to keep up the Fairs, as the whole county has but nine townships, and we have only the support of half that.

The county consists of nine townships, or eighteen miles square. Prairie, interspersed with fine groves of timber. Soil, black loam, very productive in oats and hay; very good for corn and flax; barley, medium crop. Several cheese factories in this county. A large amount of butter made, and a great deal milk shipped to Chicago. Considerable beef and pork fattened. Probably the most popular county in the State for fine sheep. Take the county as it is located—only forty-eight minutes from Chicago, by railroad—it is a desirable locality, as we are enabled to take advantage of the markets.

PHILO W. STACY,
Secretary.

EDGAR COUNTY.

OFFICERS FOR 1871.

President—William A. Wilson, Paris.

Vice-Presidents—Wm. G. Culbertson, J. I. Blackman, B. Holcomb, D. B. Elliott, J. O. Lycan, Paris.

Secretary—Walter Booth, Paris.

Treasurer—Hiram Sanford, Paris.

Directors—Officers above.

Fair held at Paris, September 13 to 16, 1871. Number of entries 754; amount paid as premiums, $1,590 70.

The Edgar County Agricultural and Mechanical Association was organized in June, 1861. Its capital stock is divided into one hundred and forty-one shares, of twenty-five (25) dollars each. These shares are held by forty-one persons. Its Fair Grounds and improvements are valued at $6,000, upon which there is owing a debt of $226 30, contracted during the past season for improvements. Its Fairs are held annually, in September. The last one commenced on the 13th and closed on the 16th. The number of entries at the last Fair was—

Horses	176
Mules and jacks	18
Cattle	46
Hogs	48
Other articles	466
Total	754

The amount paid for premiums was $1,590 70.

The following is an abstract of the Treasurer's report for December 1st, 1871:

Cash on hand at last report		$386 81
Cash net proceeds from State		99 75
Cash from other sources (Fair)		2,510 68
		$2,997 24
Expenditures for premiums	$1,590 70	
Expenditures for permanent improvements	929 80	
Expenditures of Fair	703 07	
		$3,223 57
Deficit, as stated above		$226 33

Edgar county is situated in the eastern tier of counties adjoining the Indiana State line, and occupies a central position in the State, from north to south. It averages about twenty-seven miles in length, and twenty-three in breadth. It contains 388,851 acres of land. There are in cultivation 321,704, and unimproved 67,047. The land is perhaps about equally divided into prairie and timber. The eastern half of the county is—or was, originally—very heavily timbered, and the Grand Prairie, composing the western division, is interspersed with a number of fine groves. The soil of the prairie is a very black, rich loam, upon a sub-stratum of clay and gravel, admirably adapted to corn, which is the principal production. That of the wooded portion is composed, more largely, of clay, and produces fine crops of wheat and grass. There is scarcely an acre of land in the county that could not be cultivated.

Paris, the county seat, is handsomely situated on the edge of the Grand Prairie. Its population is about 3,500. It is on the line of the Indianapolis and St. Louis Railroad; is a terminus of the Paris and Decatur Railroad; and on the Danville and Vincennes Railroad, in course of construction. In the county are the villages of Vermilion, 500; Kansas, 1,000; Dudley, 400. These are all prosperous, thrifty railroad stations. The population of the county is 24,000. The entire county is underlaid with coal, the veins cropping out in the eastern portion, and mined at small expense; it sells at the "banks" at six cents per bushel. Wood, for purposes of fuel, is abundant, and sells in Paris (for hickory and maple) at three dollars per cord. Manufacturing is in its infancy. There are several fine flouring mills in the county, and in Paris two woolen mills, employing a capital of $20,000 each. With abundance of cheap coal and timber, and railroad facilities, it would seem that the advantages offered for manufacturing purposes must, at no distant day, attract capital seeking investment.

The number of horses returned by the Assessor in 1870	10,997
The number of cattle returned by the Assessor in 1870	23,572
The number of mules and asses returned by the Assessor in 1870	1,175
The number of sheep returned by the Assessor in 1870	26,570
The number of hogs returned by the Assessor in 1870	45,0

There were shipped from five railroad stations, in 1870, a grand total of 3,484 car loads of produce and live stock.

WALTER BOOTH,
Secretary.

FULTON COUNTY.

OFFICERS FOR 1871.

President—Ira F. Elrod, Ipava.

Vice-President—David J. Waggoner, Lewistown.

Secretary and Treasurer—C. T. Heald, Canton.

Directors—Hon. S. P. Cummings, Astoria; Judge H. L. Bryant, Lewistown; Joab Marshon, Vermont; Jerry F. Willcoxen, Bryant; R. S. Voorhees, Fairview; Howard Martin, Buckhart; John Leeper, Farmington.

Fair held at Canton, October 9–13, 1871; September 16–20, 1872. Number of entries in 1871, 5,000; amount paid as premiums, $7,500.

The history of this Society for the past five years has been most remarkable. The attendance and receipts have far surpassed any County Agricultural Society in the country, and its exhibitions have been the finest in the country. The show of cattle, horses and hogs, for the past two years, has not been excelled by any agricultural exhibition in the Union. These fine exhibitions have induced a spirit of healthy rivalry among the farmers and stock men, which is fast placing the county in the front ranks of stock raising counties of the State. In hogs, they have excelled for several years. In horses and cattle they are improving fast. The county is one of the richest of the State in resources, population, wealth, progressive industrial pursuits, soil and stock raising. The Fairs are the natural development of the enterprising spirit of the people.

FRANKLIN COUNTY.

OFFICERS FOR 1871.

President—C. W. Webster, Benton.

Vice-President—Carroll Moore, Benton.

Corresponding Secretary—Wm. R. Ward, Benton.

Recording Secretary—A. B. Ward, Benton.
Treasurer—L. G. Payne, Benton.
Directors—H. Swafford, S. S. Webb, Henry Galbreth, W. A. King, Jeremiah Neal.

Fair held at Benton. Number of entries, 190; amount paid as premiums, $800.

The Ninth Annual Fair of Franklin County was holden September 13, 14, 15 and 16, 1871, and was a decided improvement upon any Fair previously held; was largely attended and well conducted. A good selection of officers are chosen for the ensuing year, and the general satisfaction given at the last meeting gives promise that the Fair for the ensuing year will be still better.

The Fair Grounds are well located, half a mile south of Benton, a town of about 1,200 inhabitants, and the county seat of Franklin county. Other towns of smaller importance are Frankfort, Mulkeytown and Airfield. A large woolen mill is located at the last named place, also a college known as Ewing High School, which has a large attendance of students and an able corps of teachers.

Franklin county has an area of 432 square miles in about equal proportions of prairie and timber land; is an excellent fruit country, being situated in the fruit growing region of Southern Illinois.

The principal productions are wheat, corn, oats and tobacco.

GRUNDY COUNTY.

OFFICERS FOR 1871.

President—Aaron Harford, Morris.
Vice-President—O. B. Galusha, Morris.
Secretary—Otis Baker, Morris.
Treasurer—James Anderson, Morris.

Fair held at Morris, September 13, 14, 15 and 16, 1871. Number of entries, 372; amount paid as premiums, $525.

HANCOCK COUNTY.

OFFICERS FOR 1871.

President—Henry W. Draper, Carthage.

Vice-President—William Freas, Carthage.

Secretary—Geo. W. Batchelder, Carthage.

Treasurer—O. P. Carlton, Carthage.

Directors—Wm. C. Hooker, John Fletcher, Hosea Burnett, Frank Stepp, John F. Cherry.

Fair held at Carthage, September 26, 27, 28 and 29, 1871. Number of entries, 858; amount paid as premiums, $1,103.

The first organization of an Agricultural Society in this county, of which I have any knowledge, was effected in the summer of 1852. With one or two exceptions a county fair has been held every year since, with varying success.

In 1864 a re-organization took place, and the society is now known as the "Hancock County Joint-Stock Agricultural Society." The Fair of last fall was a success, and the way seems clear for continued prosperity.

Hancock county lies in the great bend of the Mississippi river, on the western side of the State of Illinois, and is about midway between the northern and southern extremities of the State. Its situation renders it peculiarly adapted for all kinds of industry, the facilities for shipping, both by water and railroad, being unsurpassed. Its area is 478,209 acres, of which about one-fourth is timber and brush land, the other three-fourths being prairie. The soil in the north part of the county is somewhat sandy and very productive, while the rest of the county is but little less sandy, being a clay loam and productive; in fact, no part of the State of Illinois has a more rich and productive soil. Where there is the least sand, drainage will undoubtedly more than compensate for its absence. The timber is principally the different varieties of Oak, Hickory, Walnut, Maple, Elm, Wild Cherry, and others.

The principal crops are Wheat and Corn, although Oats, Rye and Potatoes, are extensively cultivated. The assessor's returns for the year 1871, show that 27,709 acres were in Wheat, 115,600 acres in Corn, and 38,275 acres in other crops; also, that 394,546 acres were improved, and 83,663 acres unimproved; also, that there were 15,270 head of horses, 26,790 head of neat cattle, 54,155 head of hogs, 12,227 head of sheep, and 2,271 mules and asses.

The larger portion of the crops raised are fed to the stock, the balance being sold.

There are but few manufactories in the county. The most prominent is the fine woolen mill located at the city of Warsaw, on the Mississippi river. The capital employed is about $150,000. There are other mills, but of less capacity. Water, within the body of the county, is meager, there being only one or two mills where water is used as the motive power; there is, however, an extensive water power in the Mississippi river, there being no less than twenty-five feet fall in twelve miles. A few millions of capital invested would create a manufacturing city on the east side of the river, which would rival any in the United States. The facilities for shipping north and south, by water, and east and west, by rail, are not equalled anywhere; while the fertility of the soil would furnish food for an immense number of people.

There are ten incorporated towns, with an average population of two thousand each; thirteen graded schools in a flourishing condition.

There was erected, during the year 1871, a fine college edifice near Carthage, the county seat, to be known as the Carthage College, and there is now a good classical school in operation. The cost of the college is to be $30,000, when completed. School privileges and advantages are as good as any where else.

Population of the county by the census of 1870, was 35,935.

Many of the farmers are men who prefer something akin to border life, and therefore want to go further West; consequently farms can be bought at reasonable prices.

As a whole, Hancock county offers inducements for permanent settlers, those who desire homes where they can educate their children, and enjoy facilities for worship, for travel, and the prompt sending and receiving of goods, grain and merchandise, not easily found elsewhere.

GEO. W. BATCHELDER,
Secretary.

HARDIN COUNTY.

OFFICERS FOR 1871.

President—Joseph B. Miller, Elizabethtown.
Vice-President—Isaac Hurford, Elizabethtown.
Corresponding Secretary—T. A. McAmis, Elizabethtown.

Recording Secretary—L. F. Twitchell, Elizabethtown.

Treasurer—James S. Herrod, Elizabethtown.

Directors—John Hetherington, Jas. Jackson, Pernett Ferrell, Thos. Douglas, John Jack.

Fair held one mile northeast of Elizabethtown, October 12, 13 and 14, 1871. Number of entries, 182; amount paid as premiums, $250.

Area of Hardin county, 176 square miles—all timbered land; soil, clay and loam; timber, Oak, Poplar, Walnut, Hickory and Hard Maple; principal crops, corn, wheat, oats and potatoes; mostly consumed at home, except potatoes—potatoes being the principal crop for export. The crop of potatoes this year was about 100,000 bushels. Manufactures consist of lumber, flour and leather. Capital not ascertained.

The mining interest is increasing rapidly in our county. The lead mines at and near Roseclare, are composed of the following companies, to-wit:

Fairview Lead Mining Co., capital	$500,000
Roseclare Lead Mining Co., capital	400,000
Cincinnati Lead Mining Co., capital	300,000
Pell Lead Mining Co., capital	300,000

The lead mines at Lead Hill, six miles northeast of Elizabethtown, are being worked by the following companies, to-wit:

Boston Lead Co., capital	$300,000
—— O'Neal Lead Co., capital	100,000
S. D. Young Lead Co., capital	100,000

IRON.

The iron of Hardin county is known as Brown Hematite, or the Hydrated Susquonyde of Iron. The deposits are in masses, and not veins, but the masses are generally of vast extent; in fact our hills in the iron region are all iron. A few years ago two furnaces were worked in this county, but the panic caused by the breaking out of the war caused their suspension. The tracts of land owned by these companies are still held by them, and comprise some nine thousand acres of the best mineral land in the county. The only banks worked now are owned by the "Glengary Iron and Mining Co." This company has an immense deposit of iron, as shown by their work so far, and the prospect is one of unusual brilliancy. This company is formed on a basis (I am informed) of three hundred thousand dollars. The Glengary Iron and Mining Company also own some of the best lead property in the county, some of which they are developing; and the rest are about to be developed by them. We have a very brilliant future for Hardin county as a mineral producing portion of the State, and are only patiently waiting the developments which capital from abroad will make. I should have stated that the general yield of the lead ore of this county is about 75 per cent.

LIVE STOCK AS PER ASSESSOR'S REPORT, 1871.

	No.	Value.
Horses	1,072	$39,830
Cattle	3,055	29,600
Mules	307	14,000
Sheep	3,215	3,215
Hogs	6,866	7,435

POPULATION OF TOWNS IN HARDIN COUNTY.

Elizabethtown, about	600
RosecIare, "	500
Cave-in-Rock, "	200
Shutlerville, "	100

T. A. McAMIS,
Secretary.

HENRY COUNTY.

OFFICERS FOR 1871.

President—P. H. Beveridge, Geneseo.
Vice-President—Robert Otley, Kewanee.
Secretary—R. H. Hinman, Cambridge.
Treasurer—F. G. Welton, Cambridge.

Fair held at Cambridge, August 29 to September 1. Number of entries, 875; amount paid as premiums, $2,861 50.

JASPER COUNTY.

OFFICERS FOR 1871.

President—B. W. Harris, Newton.
Vice-President—J. L. Cruze, Newton.
Secretary—H. Vanderhoof, Newton.
Treasurer—John Brook, Newton.
Directors—Ogden Monell, Lawrence Bonta, A. G. Caldwell.

Fair held at Newton, October 11, 12 and 13, 1871. Number of entries, 600; amount paid as premiums, $389.

The area of this county is twenty-three and a half by twenty-four miles—about one-third of which is prairie and two-thirds timber. Of timber—Oak, Black and White Walnut, Sycamore, Cotton, Linden, and Hickory is found here. The Embarrass river divides our county near the middle, north and south. The bottom lands are a black sandy loam, very rich, comprising several thousand acres, all susceptible of cultivation. But little cultivated land has overflowed in the thirty-two years that I have lived in Jasper county—about once in seven years. Crops are but little effected by wet or drouth. Corn, wheat and potatoes yield largely. Prairie land is a black clay loam. Products are corn, wheat and oats; average crop of wheat about sixteen bushels per acre; corn, fifty bushels; oats, sixty bushels. Wheat and corn, extensively shipped, though a large amount is fed to cattle and hogs, and is shipped in the shape of beef and pork. Great numbers of horses are also shipped from this county; sheep does well. Health in our county remarkably good; our doctors are nearly beggars. Lawyers do not thrive very well either.

My own private opinion is, that the farmers should strictly keep to themselves the number of their cattle, sheep, and hogs, and all private resources, and not scatter broadcast a knowledge of the number and amount of what we have for market, as it only gives "sharks" the information they want in order to rob us.

Our Society was organized, I think, in 1856. Our Fair Grounds are owned by the Society, and contain twenty acres, well inclosed, and beautifully situated, three-quarters of a mile from the Court House.

Our Fair was financially a success this year. Newton, St. Marie, New Liberty, Grandville and Harrisburgh, are our towns and villages. We have a large amount of water-power in our county, but not extensively used yet—a few mills only on the Embarrass river, that manufacture flour and lumber, which latter is quite an article of commerce, there being large amounts of Walnut lumber shipped East.

H. VANDERHOOF,
Secretary.

JEFFERSON COUNTY.

OFFICERS FOR 1871.

President—Sam'l W. Jones, Mount Vernon.

Vice-President—Sam'l K. Allen, Opdyke.

Corresponding Secretary—A. F. Taylor, Mount Vernon.

Recording Secretary—Jno. S. Bogan, Mount Vernon.

Treasurer—Walter E. Carlin, Mount Vernon.

Directors—Jno. C. McConnell, Gilbert S. Cummings, John W. Johnson, S. V. Bruce, Benj. W. Towner, Elijah B. Harvey, Jesse A. Dees, John Wilbanks, John Arnold, J. Curran Jones, Charles H. Judd, Calvin M. Brown, D. C. Jones, Sidney J. Mannen, Jacob Breese.

Fair held at Mount Vernon, Sept. 12, 13, 14 and 15, 1871. Number of entries, six hundred; amount paid as premiums, $1,000.

Area, 576 square miles—nearly 370,000 acres. About one-fourth is prairie, but the area of farms adjoining gives an apparent proportion of about one-third.

The crops are corn, wheat, oats, grass and castor-beans, in the order named. Fruit, potatoes, etc., are becoming more important. A farmer, planting 40 acres of corn, would, perhaps, plant 10 to 20 acres of wheat, 10 of oats, 10 of grass, 2 to 5 of fruit, 1, each, of potatoes and turnips, and, say, 10 acres of castor-beans, if any. A large proportion of the general crops are consumed in the county, and nearly all the fruit and vegetables; but a surplus is shipped, greater or less, by the St. L. and S. E. R. R., which runs through the center of the county, giving access to all markets.

The manufactures are wool, flour, tobacco, wagons, carriages and furniture. The woolen factory in Mount Vernon, capital $4,000, consumes 30,000 lbs. wool. The woolen factory in Rome, capital $2,000, cards and spins only 10,000 lbs. The tobacco factory in Mount Vernon, capital $3,000, presses and manufactures 40,000 lbs. The cigar factory in Mount Vernon, capital $1,000, uses 5,000 lbs. tobacco. About $100,000 is invested in five or six flouring mills. There are four wagon and carriage factories; capital limited.

There is no perpetual water-power in the county. Coal is found in various parts of the county, but not considerably mined. A salt spring is here, on the Muddy, and can be had in at least one locality.

The towns are Mount Vernon, population 1,850; Belle River, 300; Spring Garden, 160; Rome, 135; Opdyke, 75; Lynchburg, 50; Farrington, 27; Williamsburg, 25; Jefferson City, 30; Woodlawn, 40.

	No.	Value.
Horses	7,422	$248,513
Cattle	11,442	104,748
Mules, etc.	2,208	83,556
Sheep	19,158	12,830
Hogs	82,894	41,063
Carriages and wagons	2,286	54,805
Clocks and watches	1,784	6,062
Pianos	28	4,714
Goods and merchandise	——	62,257
Manufactured articles	——	7,075
Moneys and credits	——	152,696
Unenumerated property	——	105,142
	Acres.	
Improved lands	158,245	$901,102
Unimproved lands	205,198	553,371
Improved lots, (about 700)		200,000
Unimproved lots, (about 1050)		25,000

Railroad property, in right of way, about 350 miles, and 25 miles track. The machine shops at Mount Vernon are valued at about $200,000. There are five depots, and the usual amount of rolling stock.

I am indebted to Dr. A. Clark Johnson, who is preparing a history of the county, for the above.

A. F. TAYLOR,
Secretary.

Jo DAVIESS COUNTY.

OFFICERS FOR 1871.

President—Edgar M. Bouton, Galena.

Vice-President—Fred. Chetlain, Galena.

Secretary—R. S. Norris, Galena.

Treasurer—S. O. Stillman, Galena.

Directors—John Speer, S. S. Brown, D. A. Taylor, Moses Annets, Wm. Reed.

Fair held at Galena, September 27, 28 and 29, 1871. Number of entries, 800; amount paid as premiums, $1,600.

KANE COUNTY.

OFFICERS FOR 1871.

President—A. M. Herrington, Geneva.

Vice-President—Jonathan Tefft, Clintonville.

Secretary—S. L. Taylor, Elgin.

Treasurer—Allen P. Hubbard, Geneva.

Executive Committee—Jonathan Tefft, Clintonville; C. D. Wing, St. Charles; John Stewart, Campton; F. W. Belden, Kaneville; S. G. Paul, Sugar Grove; H. W. Hawkins, Aurora; S. B. Towne, Batavia.

General Superintendent—C. D. Wing, St. Charles.

Chief Marshal—L. P. Parker, Batavia.

Fair held at Geneva, September 20 to 23. Number of entries, 1,500; amount paid as premiums, $2,300.

The Kane County Agricultural Society is, we believe, the oldest organization in Illinois. It has held County Fairs for twenty years without omission of a single year. It is located at Geneva, the junction of the Omaha line of the Chicago and Northwestern Railroad, and Fox River Railroad. The grounds are among the finest in the State.

The country surrounding, especially Kane county, is noted for the production of excellent crops, especially corn and grass, and its fine stock is second to none in the West. Stock raising is a specialty in this county, and Du Page, adjoining, with some of the most noted of Illinois breeders. The display of fine stock enters largely into the annual exhibitions of this Society.

S. L. TAYLOR,
Secretary.

Aurora Agricultural and Horticultural Society.

OFFICERS FOR 1871.

President—W. H. Hawkins, Aurora.

Vice-Presidents—S. G. Miniken, Oswego; B. H. Campbell, Batavia; Lewis Ellsworth, Naperville.

Corresponding and Recording Secretary—R. W. Gates, Aurora.

Treasurer—H. Miller, Aurora.

Directors—George Laucks, O. W. Shedd, E. R. Allen, James A. Blair, H. H. Albee.

Fair held at Aurora, September 12, 13, 14, 15 and 16, 1871; amount paid as premiums, $3,894.

Elgin Agricultural Society.

OFFICERS FOR 1871.

President—John S. Wilcox, Elgin.
Vice-President—A. Sherwin, Elgin.
Secretary—W. H. Thompson, Elgin.
Treasurer—Walter L. Pease, Elgin.
Directors—S. W. Kingsley, Barrington; Luther Bartlett, Wayne; Benj. Cox, Elgin; F. W. Wright, Elgin; J. W. Hoagland, Elgin.

Fair held at Elgin, September 5 to 8, 1871. Number of entries, 1,400; amount paid as premiums, about $2,300.

Our Society is composed of the north half of Kane, northeast portion of Du Page, and western portion of Cook counties.

Our Society is in a flourishing condition. We own forty-two acres of beautiful land within the city limits, well fenced; a good track; beautiful and commodious amphitheater; a large floral hall, composed of a center 40 x 40 feet (octagon), with three (3) wings, forty feet each; good offices; one hundred and fifty stalls; besides pens for hogs and sheep, ample supply of living water, etc.

Our locality, taken as a whole, is decidedly a dairy region. The never-failing water and rich bottom lands of Fox river, make it one of the finest dairy counties in the world. The chief business of the farmers of this locality is, consequently, dairying, our markets being the Illinois Condensing Company, of this city; the Elgin Dairy Company, who are running a butter and cheese factory; also, large amounts are daily shipped to Chicago. The larger portion of the milk used in that city is shipped from this point. There are also cheese factories scattered through the county at short distances from each other, making, at all times, ready market for the milk-man.

A very large proportion of this valley is under a high state of cultivation; perhaps one-tenth is covered with second growth timber. The remainder is in meadow or farming lands. The inclosed slips, prepared for the N. W. Dairymen's Association, will give you some idea of the extent of the dairy interest in this locality.

Our manufactures consist of various branches. Our National Watch Company stands pre-eminent, and is of great importance to our city If you should want a more minute description of this business, wil send it with pleasure. We have Foundries, Woolen Mills, Grist an Saw Mills, Bolting Mills, Gas Works, Butter Factories, and a Packin Factory, where all vegetables are bought and canned—the princip business being to put up sweet corn and tomatoes; also, fruits. This is truly the farmers' factory.

Our water-power is vast, and not all used as yet—making this one of the finest places in the West for manufacturing. The amount of capital used in manufacturing in this and the adjoining townships cannot be less than $2,000,000.

Corn and oats are the principal crops cultivated, and are almost wholly used for feed on the farms. Our timber consists of Oak, Ash, Hickory, Basswood, and a few other varieties. Our soil is mostly a dark sandy loam, quick to start vegetation, and well adapted to either extreme drouth or wet. Diseases of stock—we have none, of a contagious nature.

REPORT OF FACTORIES IN AND AROUND ELGIN.

It is now admitted that the tract of country embracing the northern portions of Cook, Du Page, Kane, McHenry, Boone and Winnebago counties, is equal to any similarly sized tract in the Union for the purposes of dairying. The high, rolling ground, abundant springs and water courses, climate, arability of soil and accessibility to markets, combine to make especial advantages for the dairyman. As yet, this section may not be as productive as older countries, for doubtless cultivation is not carried to as high a grade, but the capabilities are here, and each year our agriculturists are improving in their manner of cultivation, and the good effects are already being seen.

Without undue partiality, we may claim that the country within a radius of 12 miles around Elgin is the center of this great and constantly increasing traffic. We estimate, from good data, that within this radius the dairy stock numbers 7,000 cows; averaging them at $50 each, will give $350,000 invested in stock alone. Taking into the account the value of land, buildings, and other accessories to the business, and the capital involved will reach among the millions. This, for a country settled but little more than 30 years, shows well.

The proper conducting of the business requires close and constant labor, care in handling stock, knowledge in selection, and thorough system in management. Dairymen are learning the value of kindness and good feed. The farms have from 12 to 60 cows each, and, as a rule, of cattle that are a credit and a source of profit.

We now present figures compiled from reports made from points of receipt and shipment, which will give a fair idea of the business. These reports are all for 1869. (Add 10 per cent. more for 1871.)

City of Elgin—Shipped to Chicago, 214,979 gallons; freight paid, $4,299 58. Received at condensing factory, 358,875 gallons. Of this 52,071 gallons were made into cheese, the balance being condensed. Cheese made, 47,627 pounds.

Hanover—Two miles east of Elgin. Factory owned by I. H. Wanzer & Co. Received 340,000 gallons; shipped to Chicago, 20,000 gallons; cheese made, 297,711 pounds.

N. H. Larkin's Factory—Five miles west. Received 349,777 gallons; cheese made, 287,310 pounds.

Gould & Hammond's Factory—Four miles east. Received 315,000 gallons; cheese made, 296,000 pounds.

Wayne Factory—Albro & Son, six miles east. Received 192,300 gallons; cheese made, 176,788 pounds.

Buena Vista Factory—Eight miles west. Received 49,710 gallons; cheese made, 45,700 pounds.

Dundee—Five miles north. Shipped to Chicago, 501,106 gallons; freight paid, $10,022 13.

Algonquin—Twelve miles north. Shipped to Chicago, 172,000 gallons; freight paid, $3,440.

Gilbert Station—Six miles west. Shipped to Chicago, 270,752 gallons; freight paid, $5,445 48.

Huntley—Twelve miles west. Shipped to Chicago, 32,064 gallons; freight paid, $801 60.

Clintonville—Three miles south. Shipped to Chicago, 98,138 gallons; freight paid, $1,962 76.

Wayne—Eight miles south. Shipped to Chicago, 44,000 gallons; freight paid, $880.

Totals for 1869.—Milk produced, 2,938,295 gallons; cheese made, 1,301,056 pounds. Total value of milk at 13 cts. per gallon, $371,879 35. Value of butter at 25 cts. per pound, $50,000. Total, $421,879 35.

BUTTER.—Of this article it is more difficult to get a correct account. There are but few dealers who make it much of a specialty. The production of butter has not yet received the exclusive attention of a large class of farmers. It is mostly made when the market or factories become glutted with milk, as sometimes occurs, to work off the surplus. From examination of books of merchants, kindly offered for the purpose, we ascertained that there has been bought in Elgin at least 200,000 pounds. This looks well. Valued at 25 cents per pound, this alone amounts to $50,000. In comparison with former years, the product has vastly increased.

In 1866 the product was 757,112 gallons, and 384,000 pounds of cheese made. In 1867 the product was 1,234,643 gallons, and 646,580 pounds of cheese were made. In 1868 the product was 1,830,649 gallons, and of cheese made, 857,483 pounds. These figures have been largely increased annually.

M. H. THOMPSON,
Secretary.

KNOX COUNTY.

OFFICERS FOR 1871.

President—A. J. Dunlap, Galesburg.

Vice-President—Henry Arms, Knoxville.

Secretary—George L. Hannaman, Knoxville.

Treasurer—M. P. DeLong, Center Point.

Executive Committee—M. L. Overstreet, John G. West, A. N. Phelps, T. S. Bassett, W. W. Campbell, J. H. Sumner, L. W. Benson, Joseph Clesson, H. R. Cashman.

Fair held at Knoxville, September 12, 13, 14, 15 and 16, 1871. Number of entries, 2,375; amount paid as premiums, $2,050.

LA SALLE COUNTY.

OFFICERS FOR 1871.

President—Samuel R. Lewis, Ottawa.

Vice-Presidents—E. C. Marks, La Salle; Otis O. Wakefield and J. R. Shaver, Ottawa.

Secretary—Wm. E. Bowman, Ottawa.

Treasurer—Wm. E. Beck, Ottawa.

Executive Board—Geo. C. Cadwell, C. H. Green, H. K. Parr, C. H. Force, John Stout, P. Donlevy, Geo. A. True, F. L. Fiske, J. K. Spencer.

Fair held at Ottawa, second week in September. Number of entries, 849; amount paid as premiums, $2,009.

LAWRENCE COUNTY.

OFFICERS FOR 1871.

President—Samuel Gillespie, Lawrenceville.

Vice President—Geo. M. Whittaker, Lawrenceville.

Secretary—J. W. McCleave, Lawrenceville.

Treasurer—Wm. C. Clark, Lawrenceville.

Directors—Gustave Kleinwort, Charles L. Thompson, Wm. A. J. Micure, Merrit Davids, Adam Lackey, Owen Pinkstaff, J. L. Flanders, David Smith.

Number of entries, 313; amount paid as premiums, $730 75.

Area, 234,880 acres; about one-third prairie.

Character of soil, about one-fourth sandy, three-fourths clay-loam—one-half very rich. Wheat, corn, oats, barley, etc. Large proportion shipped.

Returned by assessors for 1871, 5,261 horses, 8,031 cattle, 436 mules and asses, 1[illegible],673 sheep, 17,160 hogs.

J. W. McCLEAVE,
Secretary.

LEE COUNTY.

OFFICERS FOR 1871.

President—Wm. H. Van Epps, Dixon.

Vice-President—Wesley Stewart, Alto.

Secretary—J. T. Little, Dixon.

Treasurer—Jason Ayres, Dixon.

Directors and Executive Committee—Abijah Powers, Palmyra; D. B. Raymond, South Dixon; Samuel Dysant, China; Chas. Gardner; Nachusa; Henry T. Noble, Dixon.

Fair held at Dixon, October 3, 4, 5 and 6, 1871. Number of entries, 1,248; amount paid as premiums, $1,300.

Area of Lee county, 430,610 acres. Number of horses, 9,922; cattle, 19,197; mules and asses, 219; sheep, 6,245; hogs, 28,168; dogs, 1,998.

Total value of lands and improvements	$2,361,461
" lots and improvements	506,022
" personal property	727,700
" railroad property	158,582
Total valuation of taxable property for 1871	$3,753,765
" " 1870	3,740,271
Increase for 1871	$13,494

Acres in wheat, 34,556; acres in corn, 69,972; acres in other crops, 39,148.

LOGAN COUNTY.

Atlanta Union Central Agricultural Society.

OFFICERS FOR 1871.

President—Wm. H. Beverly, Atlanta.

Vice-Presidents—J. A. Pitts, McLean county; Thos. Maddox, Waynesville, DeWitt county; A. N. Dills, Atlanta, Logan county; G. N. Bryson, Armington, Tazewell county.

Secretary—S. D. Fisher, Atlanta.

Treasurer—Frank Hoblet, Atlanta.

Directors—P. R. Marquart, James Yeazel, J. H. Bell, W. P. Hunt, and J. H. Paullin, Atlanta, Logan county; Daniel McFarland, McLean, McLean county; Wm. Teel, Waynesville, DeWitt county.

Fair held at Atlanta, August 29 to September 2, 1871. Number of entries, about 2,000; amount paid as premiums, $2,066.

MACOUPIN COUNTY.

OFFICERS FOR 1871.

President—Geo. Fishback, Carlinville.

Vice-President—J. P. Henderson, Virden.

Secretary—Thos. R. McKee, Carlinville.

Treasurer—J. T. Sargent, Carlinville.

Directors—C. A. Walker, Carlinville; R. E. Dorsey, Gillespie; John Ryan, Virden; P. L. Denby, Buford; P. O. Huggins, Bunker Hill.

Fair held at Carlinville, September 19, 20, 21 and 22, 1871. Number of entries, 1,200; amount paid as premiums, $2,800.

Area twenty-four by thirty-six miles, about five-sixths prairie; principal crops, corn and wheat—about equal proportions of each; nearly all winter wheat. A large portion of the wheat made into flour in the county; of corn, probably nine-tenths fed in the county.

We have twenty flouring mills, using about one and a half millions bushels of wheat annually.

There are two woolen mills, with capacity, each, of about fifty thousand pounds annually. Not much other manufacturing in the county, except numerous blacksmith and wagon shops.

There is abundance of coal in the county. It is generally found about two hundred and fifty feet below surface, and six or seven feet thick. In the west part of the county, on Macoupin creek, it is found cropping out.

We have fifteen towns, with about 14,000 population in the aggregate, and also the county seat, Carlinville, with 3,800 inhabitants.

Population of county is now 38,000.

GEO. FISHBACK,
President.

MASSAC COUNTY.

OFFICERS FOR 1871.

President—Wm. P. Bruner, Metropolis.
Vice-President—J. C. Burden, Metropolis.
Secretary—L. P. Stallcup, Metropolis.
Treasurer—A. D. Davis, Metropolis.
Directors—J. C. Willis, Ben. Rankins, Fritz Miers, Ransom Dever.

Fair held at Metropolis, October 25, 26, 27 and 28, 1871. Number of entries, 326; amount paid as premiums, $1,674.

Massac county is situated on the Ohio river, along which it lays for about thirty miles. The county town, which is the city of Metropolis, lying immediately on the bank of the river, about forty miles above Cairo, and about ten miles below the mouth of the Tennessee river, contains a population of nearly four thousand. The location is one of the most beautiful on that noble river Ohio, rising very gradually from the river to a hight of about forty feet above the highest water. Here the hills on either side approach very near the main channel of the river, making it quite possible that some day a bridge may be erected here, as the most favorable point on the river, over which, without hindrance or handling, the yet uncounted millions of grain raised in this great State may surely pass to the Gulf, and thence to all parts of the world; and the vast products of the South, and even of the tropics, shall find an easy, short and sure way to the markets of the North. The area of Massac county is about 216 square miles.

The soil is diversified, being in large part rich loam, part clayey and part marshy. The country is mostly gently sloping hills or broad, well drained table lands and bottoms. The whole was originally heavily timbered. The timber in a large part of the county is yet very fine, and embraces all the various kinds of Oaks, Hickorys, Walnut, Poplar, Cypress and Gum, intermixed with Dogwood, Sumach, Paw-Paw, Sassafras and Hazel. Every thing grown in the temperate zone will grow here. The crops mostly cultivated now are Corn, Wheat, Potatoes (Sweet and Irish), Oats, Tobacco, Barley, etc. Apples, Peaches, Pears, Plums, and all kinds of small fruits and berries, grow well and are quite a sure crop. The growing of fruits, berries and gardening products is especially sure, pleasant and healthy. It is believed that the day is not far distant when the fruit growing capacity, and the wonderful advantages of this county, and of the region bordering the Ohio river near here, will be more justly appreciated. Here may be found the most desirable lands, cheap in price and delightful in location, open all the year to the markets of the world. There are but a very few days in the year when navigation is not entirely free, and the chances of shipping are from two to ten a day. The most prominent branches of manufacturing are Lumber and Flour. In the city of Metropolis we have seven lumber and planing mills, with eleven others in our little county. In the city we have four flouring mills, with others in the county, and yet a large amount of wheat is yearly shipped to other points. It is believed that there is no better location for steam machinery for making Furniture and Agricultural Implements than the city of Metropolis, Illinois. We have two ship-yards, where are built many of the best barges and hulls that now float on the western rivers; a spoke and hub factory that took the premium the past year, for quality of timber and workmanship, wherever it came in competition. No better location exists for making all kinds of wagons and cooperage.

The manufacture of tobacco is also quite extensively carried on here. We have, also, workers in iron, leather, wool, and cotton, and in clay, employing in all an aggregate capital of about four hundred and sixty-five thousand dollars ($465,000). The city commands a view of the river for over twenty miles; is high, dry, healthy and prosperous, surrounded by a beautiful country, that needs only the touch of the hand of genius and industry, backed by a reasonable amount of confidence and *cash*, to make it one of the richest in our great State. Lands in this county are cheaper, far cheaper, in proportion to their real value, than in any county in the State. The climate is mild, and water good. With the exception of the cholera among hogs, no disease worthy of notice has ever yet affected the stock-growing interests of the county.

We have here a County Fair Association in good condition, well patronized, and promising good results for the future. We have two newspapers, schools and churches plenty in quantity, and improving yearly in quality. We have as yet a large area of good land, uncultivated, to which we cordially invite industrious and enterprising emigrants. Already quite a number of Germans have located here, and seem quite prosperous. We have unbounded confidence in the future, and in the on-coming millions who shall yet climb our hills, run over our plains, dig in our clay and coal banks, and sweep over this continent with the resistless power of a yet higher civilization and truer appreciation of the true, and good, and beautiful. We confidently hope for a full share of their appreciation, and to receive the notice our little spot of earth so justly merits, and yet so feebly presents to the world.

L. P. STALLCUP,
Secretary.

McDONOUGH COUNTY.

OFFICERS FOR 1871.

President—Amaziah Hanson, Adair.
Vice-Presidents—One from each township.
Corresponding Secretary—Joseph Lownes, Macomb.
Recording Secretary—T. D. Knapp, Macomb.
Treasurer—S. H. Hogan, Macomb.

Fair held at Macomb, September 19, 20, 21 and 22. Number of entries, about 2,000; amount paid as premiums, $1,500.

MENARD COUNTY.

OFFICERS FOR 1871.

President—James W. Judy, Tallula.

Vice-President—Henry H. Marbold, Greenview.

Directors—J. G. Greene, Thos. Kincaid, G. B. Pemberton, C. R. Pierce, E. L. Swiney, M. G. Combs, W. C. Smoot, A. G. Nance.

Treasurer—D. Fischer, Petersburg.

Secretary—J. G. Strodtmann, Petersburg.

General Superintendent of Fair Grounds—George Hudspeth.

Marshal—James Goldsby.

Fair held at Petersburg, September 12, 13 and 14, 1871. Number of entries, 620; amount paid as premiums, $1,867.

Population, 12,000. The territory which comprises the county of Menard originally belonged to the county of Sangamon, which was subdivided by the Legislature, passing a bill in 1838 and 1839, at which time the territorial boundaries of Menard were formed, as follows, to wit:

Beginning at the southeast corner section twenty-two (22), township 17, range 8 west, 3d P. M.; thence east to the southeast corner section 21, township 17, range 6 west, 3d P. M.; thence north to the southwest corner section 15, township and range last aforesaid; thence east to the southeast quarter southeast quarter section 18, township 17, range 5 west, 3d P. M.; thence north one-half mile, thence east one quarter mile, thence north one-half mile, thence east one-quarter mile, thence north one mile and a half, thence east to the southeast corner section 30, township 18, range 4 west, 3d P. M.; thence north to the northeast corner lot 19, township 19, range 4 west, 3d P. M.; thence west to the southeast corner section 13, township 19, range 5 west, 3d P. M.; thence north to Salt Creek; thence with said creek to the northwest corner section 7, township 19, range 6, where said creek intersects Sangamon river; thence with river to the southwest corner section 10, township 19, range 8; thence south to place of beginning—containing an aggregate area of 197,975 acres. Estimated area of river, 700 acres; making a total of 198,675 acres, well watered and timbered.

COUNTY SEAT.—Located at Petersburg, May, 1839. Benj. Mitchel, of Tazewell county; John Henry, of Morgan county; and Newton Bateman, of Fulton, duly appointed commissioners to locate the seat of justice for the county of Menard, met in Petersburg, Menard county, on the first Monday in May, 1839, and after being duly sworn to faithfully and impartially discharge the duties imposed on them by act of Legislature, approved February 15, 1839, and exploring said county, located the seat of justice at Petersburg, in said county. Sangamon river enters Menard county at the northeast corner section 21, township 17, range 6 west, 3d P. M.; thence running northwest to section 36, township 18, range 7; thence north through township 18, range 7, township 19, range 7, township 19, range 6, to intersection of Salt Creek; thence westward, dividing Menard and Mason counties, to where it strikes Cass county.

STATISTICS.

Acres improved lands	147,901
Acres unimproved lands	50,074
Total	197,975
Acres in wheat	9,170
Acres in corn	42,763
Acres in other products	6,784
Total in cultivation	58,717
Improved town and city lots	642
Unimproved town and city lots	1,806
Total	2,448
Miles of railroad in operation	23.159
Miles of railroad under contract	22

THE TOWNS AND VILLAGES.

ROBINSON'S MILLS.—Population, 40. Robinson's Mills is located in the northwestern part of the county. It nestles among the hills in that section of the county which is most admirably adapted to grape culture and the manufacture of native wine. The principal part of the business in this place is transacted by Col. Calvin Atterberry.

OAKFORD.—Population, 60. This village is located on the Springfield and Northwestern Railroad, at the south bluff of the Sangamon river, in one of the most fertile regions in northwestern Menard.

ATTERBERRY.—This is a station on the Springfield and Northwestern Railroad, about half way between Petersburg and Oakford, and is favored by a rich country and a wealthy class of farmers. Atterberry takes its name from an influential class of men, bearing that name, in that vicinity.

TALLULA.—Population, 500. Among the various villages in this county none rank higher than Tallula, which is noted for the quiet moral deportment, and the educational interests of her people. This place is surrounded by a fine country, and a very wealthy class of farmers. This is an important shipping point. There are several stores, a blacksmith shop and a milliner shop. There are more church edifices than any place, of its size, in the county. Their school house would be an ornament to any place.

Athens.—Population, 400. This is an old place, in the southeast part of the county. It is populated with a quiet, honest, good class of citizens, and is noted for her churches and surroundings. It is surrounded by dense forests of as fine oak timber as can be found in any section of Illinois. A coal shaft, about ninety feet in depth, is being profitably operated here, and the finest quality of coal is hoisted. A first class steam grist mill, under the charge of Mr. Barfield, one of the proprietors, has the reputation of a fine paying business. There are quite a number of stores of different kinds in this place, besides blacksmith shops and a pottery. There is also a nursery. The Horticultural and Floral interests of that place are under the charge of Mr. Joel Hall.

Sweetwater.—Population, 300. This place, which hovers on the eastern side of Sugar Grove, is one of the finest locations in the county. Although her inhabitants are few in number, yet she can boast of as great an aggregation of capital and good taste as any village in the county. There are two churches, one blacksmith shop, a shoe shop, two stores, and a good grist and saw mill. The grove adjacent to this place is noted for the vast number and productiveness of its sugar maple trees.

Greenview.—Population, 600. This is one among the most enterprising and go-aheadative villages in the county. It is one of the most lovely locations in the State. Its location is on a beautiful plain, which gradually dips to the north till it meets Salt Creek. The surrounding country cannot be surpassed for the fertility of the soil, the vast quantities of corn, and the great number of cattle and hogs. This is quite a shipping point, over the Chicago and Alton Railroad. There are several stores, two lumber yards, two blacksmith shops, a harness shop, a cabinet shop and a first-class hotel. The educational and religious interests of this place are in a very healthy condition. The school house is one of the finest in the county. The improvements of the surrounding country are of a good order. This place and the surrounding country, when properly improved and developed, is destined to be the most beautiful and wealthy in the county. The Odd Fellows and Masons each have flourishing lodges in this place.

PETERSBURG.—Population, 2,500. Petersburg, the capital town, and the largest in the county, is in the valley of the Sangamon River. That stream flows past the city on the east, leaving her between it and the bluffs. In the west part of the city, on the bluffs, are the finest building spots in the world. The surrounding country is very productive, and the people are very wealthy. The improvements are of the first order. There are five coal shafts in successful operation here. Great quantities of coal are raised, much of which is used at home, while tons are shipped to various points on the Chicago and Alton Railroad. The oak forests on all sides of this city afford the very best quality for manufacturing purposes. It makes excellent wagon timbers, plow beams, threshing machine knees, and, in fact, everything used in the manufactory of agricultural implements. The water supply at this place is superabundant. There are two grist mills, one woolen establishment, several blacksmith shops, numerous dry goods and grocery stores, harness shops, livery stables, paint shops, drug stores, banks, bakeries, hardware and tin establishments, hotels, newspapers, millinery stores, lumber yards, carriage and wagon shops, and, in fact, all kinds of business establishments, and men of all trades and professions.

The moral status of the people will compare favorably with that of any other town in the State. The educational and church interests are in a very satisfactory condition. The fact is, this city is the most favorably surrounded and has a better location than any other town in the State. There cannot be found in Central Illinois a better location for operating manufacturing establishments than Petersburg. It contains all the natural elements and available resources necessary to insure safe investments and profitable returns. Fuel, coal and wood is cheap, material cheap, labor cheap, and water superabundant. Such a combination of favorable advantages are seldom met with. Capitalists from abroad are invited, by the people of this county, to visit this county seat, and examine for themselves our natural advantages and our resources, and compare their availability with that of other places.

A joint stock company has effected an organization and is raising funds with a view of erecting a foundry, machine shop, or agricultural manufacturing establishment; and it is desired to call the attention of those who have means, to this fact. Our people are confident that capital so invested would be a safe investment, and would be a profitable and fruitful source of revenue to the proprietors. This is not considered by our people a local measure. It is a measure in which the people of all parts of the county are interested, and in which they all take pride. They look upon it as a primary movement which, in time, will lead to the development of the resources of our county, which shall make us a great and wealthy people. Besides, as a matter of political economy, and measure calculated to bring money and capital from abroad and aggregate the same at any given locality in the county, it will have the effect of reducing the taxes of our people in proportion to the amount aggregated. This is a very important item, we consider, just at this time, when agricultural products are cheap and taxes very high. In addition, we would call attention to the fact that this city is at the crossing of the Springfield and Northwestern and the Chicago and Alton Railroads, thus giving her all desirable transporting facilities, and the advantage of competing lines. This branch of the Chicago and Alton will hereafter be the main line from Chicago to the Southwestern. This Springfield and Northwestern will be the principal thoroughfare from the great Northwest to the cotton States. Hence, it will be readily understood that from whatever standpoint we may view, Petersburg has no equal in natural and artificial advantages for successfully operating manufacturing establishments.

The Odd Fellows and Masons each have flourishing lodges in Petersburg. They are in excellent working order. Clinton Lodge No. 19, A., F. and A. M., was founded by the Hon. John Bennett, who has lived to ripe years, and devoted a great part of his life to the good of the order. DeWitt Chapter No. 119, R. A. M., is at Petersburg. This order is in a very fine and a most healthy condition.

The resources of this county will bear a favorable comparison with those of any county in the State, or the United States. She contains every element essentially necessary to the wealth and prosperity of her people.

Menard county is chiefly adapted to stock raising, horticultural and agricultural pursuits. This is owing to her water advantages and the unparalleled fertility of her soil. It is believed no county in the State offers such peculiar advantages for these pursuits as this. The soil on the prairie lands is a deep black loam; the bottom land is a deep black sandy loam, and the timbered land is a light grayish clay. The prairie land produces corn, wheat, oats, rye, barley, potatoes and vegetables. The bottom lands, when properly drained, are the best corn lands in the world. The timber lands are very productive, when properly managed, and produce corn, wheat, oats, rye and barley. These lands are much better adapted to wheat growing than the prairie lands. All these lands produce grass in great abundance. The great mistake committed by our farmers, heretofore, has been an attempt to cultivate too many acres to the amount of labor employed. We would particularly urge the necessity of economizing in farming as in all other pursuits. If men in other pursuits paid as little regard to economy as our farmers, they would end their business in ruin and bankruptcy. If our farmers paid as close attention to their business and the principles of economy as men in other pursuits in life, they would soon become the most wealthy class in the country. It is a well established fact that ten acres, properly cultivated, will produce as much grain as thirty improperly cultivated. This being true, we contend it is economy to cultivate only the number of acres that can be cultivated well. There is a very decided improvement within the last few years in this county, but there is room for still greater improvement. Grass is very profitable for stock raising ; therefore, what can not be properly cultivated should be put in grass. There is no good reason why our farmers cannot get all the land they can profitably cultivate, and yet graze large herds of cattle. Our bottom and wet lands should all be properly drained. They are the richest corn lands in the world, and should be put in a condition to be cultivated and made to contribute to our productions. We have several thousand acres of these lands lying along Salt Creek and the Sangamon River. The drainage law, passed at the last session of the legislature, provides for forming associations and the exercise of important corporate authority for drainage purposes. Our people who are more directly interested in these lands, should look after this matter. We are confident some action can be taken under this law that will be of vast utility to the proprietors of these lands, and a great benefit to the taxpayers of the county. Every foot of soil in the county should be made available by being in a condition for cultivation. Idle soil is so much idle capital, and non-productive. If we want to become wealthy and prosperous, we cannot afford to suffer any of our capital or available resources to remain idle. We know no country in the world where farmers receive so large and rich rewards for the amount of labor bestowed, or the capital invested, as in Menard county.

Vast quantities of corn are annually harvested and fed in this county, or shipped. Wheat, oats, rye and barley are also raised in great abundance, but not shipped in such quantities as corn. It is estimated there cannot be found on the continent another area of territory, containing no greater number of square miles, that produces more grain, or ships a greater number of fat hogs and beef cattle, than Menard. Our hogs and cattle are of a fine quality. Great attention is devoted by our stock men to breeding their hogs and cattle. It is to be hoped that increased attention will continue to be paid to this interest.

Our people should direct their attention more to breeding horses. We are not as well advanced with this interest as in fine cattle. Some little attention, it is true, has been paid to breeding draft horses, within the last few years, but we have not reached that standard so desirable. We want blooded horses.

Our sheep, it is presumed, will compare very well with the sheep in adjoining counties. We have some very fine breeds. Since the close of the late war sheep raising has not been so profitable as during that eventful period, when the demand for wool was so great. But we cannot understand why each farmer cannot manage a small flock very profitably. We ought to grow sufficient quantities of wool to keep our woolen establishments operating.

We have but one woolen establishment in the county, and we consider it of the utmost importance to our interests to give it all the encouragement possible. It is supplied with as fine machinery as is to be found in the world. The yarn, flannels and cloth show superior workmanship. Hence, our people should endeavor, at least, to supply all the wool necessary to keep it in successful operation. There could not, it seems to us, be any plausible reason urged why we should not be able to manufacture all the woolen goods necessary for home consumption.

In addition to the agricultural interests of the county, her other resources are very great. A fine quality of stone is found in different parts of the county, and is quarried to some extent. This stone is an excellent building material, and is used to some considerable extent for this purpose. A good quality of limestone exists in this county, and can be made very profitable in the manufacture of quick-lime. This stone is easy of access in the vicinity of Rock Creek and Old Salem.

About one-third of Menard county is covered with a good quality of timber, the principal of which is Oak, Walnut, Hickory and Sugar Maple. The Oak furnishes a splendid material for manufacturing wagons, plows, corn planters and other machinery, in which wood is used. It also furnishes an excellent material for barn and bridge timbers. The Walnut is valuable for cabinet work, and the manufacture of all kinds of furniture. The Sugar Maple furnishes a very valuable timber for framing purposes, and the production of maple sugar, which is manufactured to some extent here.

This county is abundantly supplied with water. It is bounded on the north by Salt Creek and the Sangamon River. The Sangamon runs through the center, north and south, and Indian Creek, Grove

Creek, Pike Creek, Cavine's Creek, Rock Creek and Clary's Creek, run in various directions through the county; besides, there are several other branches and creeks which afford abundant water.

According to the geological survey, the whole county rests upon a bed of a very superior quality of coal. There are four or five veins. The lower, which is the principal vein worked, is from six to eight feet thick, and is everywhere easy of access.

From the brief notice we have given our principal resources, it will be very readily understood they are very great. We have every element necessary for building and successfully operating, upon a cheap scale, all kinds of manufacturing establishments. We have, or can produce, almost all the material necessary to be used in manufacturing threshing machines, reapers, mowers, corn planters and plows. We have inexhaustible coal beds and thousands of acres of timbered land from which to draw fuel, and a superabundance of water, the necessary elements for generating steam, to drive the machinery necessary to successful and profitable operating. There are several localities in the county which would be very favorable to such an enterprise.

A manufacturing establishment for making agricultural implements would be of vastly more utility to the people of Menard county, in general, than any other enterprise in which they could embark, because it would bring capital to our county and increase our wealth. Instead of paying parties a bonus who reside outside of our county, all the money they would be compelled to pay out for agricultural implements would be paid out in our own county, and, of course, there would certainly be just that much more property in the county upon which to levy and collect taxes. Every dollar of capital brought to this country from abroad, is, in the ratio that that dollar bears to the aggregate to each taxpayer, as much more wealth as the amount of property upon which he pays taxes. It, therefore, follows, as a logical result, that every man in the county would be benefited by any movement which would bring money into the county. Manufacturing establishments would do this more certainly than any other kind. Farming utensils and agricultural implements are a necessary article of consumption. The farmer must have them. If we manufacture, the people of other counties will buy of us. We will draw from them, instead of suffering them to draw from us. We will export, not import. The people who export always have the advantage, because they are continually impoverishing those to whom they sell, to the extent they sell, unless the people to whom they sell have some commodity which they manufacture to give in exchange. Heretofore we have suffered, and are now suffering, other sections of the country to impoverish us just to the extent we are now compelled to buy farming implements, such as threshers, reapers, mowers, corn planters, plows, etc., from them. It is time the tables were turned. This is more especially the case when we consider we have all the natural elements and original resources to manufacture these things ourselves. Every farmer in the county could afford to donate one hundred dollars to such an enterprise, and then make money. But it need not be a donation. It would simply be a profitable investment. We associate ourselves together as an Agricultural Society. We know the great benefits flowing from its exertions and influences in the county. But such an enterprise as we have above suggested would be of equal, if not greater, advantage to the people of the county generally.

The Society have every reason to be encouraged. It will be borne in mind, it has labored under very many disadvantages. The timely aid from the county enabled the Society to become a complete success. It is the wish and aim of the Society to promote the Agricultural, Horticultual, and Stock-raising, and industrial interests of the county. It is to be hoped the development of our resources will be continued, with increased interest. We contain, within our borders, everything, when properly developed, to make us a great, prosperous, and wealthy people. The facilities for the transportation of our products to the markets are very good. The Jacksonville branch of the Chicago and Alton Railroad traverses the county almost through the center, from the northeast to the southwest. This branch, in a short time, is to be the main line from Chicago to the southwest. The Springfield and Northwestern Railroad is now in course of construction, and will be completed within a few months. The road crosses the Chicago and Alton at Petersburg, traversing the county from the northwest to the southeast, through the center, thus giving this city peculiar advantages for transporting facilities.

Our educational interests are equal, if not superior, to that of any other county in the State. The grade of our common schools is of an excellent standard, and is being continually advanced. Among the many fine school houses in the county, those at Tallula and Greenview are far superior. The moral status of Menard county will compare favorably with that of any in the Union. Her churches are numerous and her chapels many. Almost all denominations, religious and charitable associations, are to be found in this county. We, therefore, conclude this county has no superior anywhere in the country, in any respect. She produces as much corn, wheat, oats, barley, rye, grass, vege tables, timber, rock, lime, building material, coal, wood, hogs, sheep, horses, and cattle, as any other territory of equal extent in the State; her transporting facilities are not excelled anywhere; her educational interests are of a very satisfactory grade; her morals superior; her resources inexhaustible; her women beautiful; her men industrious; and all prosperous. It is the garden spot of Illinois, and the Paradise of the Union.

J. G. STRODTMANN,
Secretary.

MONTGOMERY COUNTY.

OFFICERS FOR 1871.

President—Wm. A. Young, Butler.
Vice-President—Lewis H. Thomas, Virden.
Secretary—C. M. Wood, Hillsboro.
Treasurer—C. M. Wood, Hillsboro.
Directors—Wm. H. Brewer, J. H. Knowles, L. D. Washburn, J. H. Shimer, M. S. Berry.

Fair held at Hillsboro, October 10, 11, 12, and 13, 1871. Number of entries, 546; amount paid as premiums, $1,330.

MORGAN COUNTY.

OFFICERS FOR 1871.

President—Samuel Woods, Jacksonville.
Vice-Presidents—Wm. Richardson, Jesse T. Newman, Jacksonville.
Secretary—S. R. King, Jacksonville.
Treasurer—Felix F. Farrell, Jacksonville.
Directors—J. H. Potts, W. C. Carter, F. E. Dayton, Chas. Sample, N. D. Graves, F. M. Morton, Jacksonville; John Gorden, Lynnville; M. W. Riggs, Riggston; J. I. Holmes, Orleans; Geo. Graff, Jacksonville.

OFFICERS FOR 1872.

President—Chas. Sample, Jacksonville.
Vice-Presidents—N. C. Carter, J. H. Potts, Jacksonville.
Secretary—J. Pierson, Jacksonville.
Treasurer—C. D. Miller, Jacksonville.
Directors—Geo. Graff, D. N. Graves, N. Richardson, F. E. Dayton, J. S. Rector, Samuel Woods, Irving Dunlap, Jacksonville; M. W. Riggs, Riggston; Peter Roberts, Franklin; J. I. Holmes, Orleans.

Number of entries at the Fair of the Association, held in September, 1871, were 1,119; and the premiums paid aggregated, in round numbers, $5,000.

The next Annual Fair of the Association will be held at its grounds, which are of unsurpassed beauty, lying just west of Jacksonville, on Tuesday, Wednesday, Thursday, and Friday, October 1, 2, 3, and 4, 1872.

The prospects of the Association are most encouraging and bright. The last Fair held under its auspices was, in every respect, a decided success.

Morgan county has a population of 30,000. Its real and personal property exceeds in value $40,000,000, and the entire debt of the county is but $200,000, or but a half of one per cent. of the aggregate value of the property of the county.

In agricultural resources, fertility of soil, highly improved farms, rich and enterprising farmers, natural beauty of the country, and general prosperity of her people, Morgan county is not surpassed by any other county in Illinois. It is one of the great grain-producing and stock-growing counties of the State. More cattle, and a higher grade in quality, are fed in and shipped from this county, than any other in the West.

Lands of Morgan county range, in value, from $50 to $150 per acre, and even at these figures but few of the old and sagacious farmers of the county, who have learned their real value, are willing to sell.

Area of Morgan county, 358,035 acres, of which 305,004 acres are improved, and 53,031 acres are unimproved. About one-seventh of the land of the county is timbered. The soil is generally deep, rich, pervious to water, black-loamy, and very productive.

The crops generally cultivated are corn, wheat and oats. In 1871, about 80,000 acres of corn, 30,000 acres of wheat, and 10,000 acres of oats were raised in the county, and produced about 4,000,000 bushels corn; 500,000 bushels wheat, and 400,000 bushels of oats. A very large part of the land of the county is devoted to blue-grass and clover, principally for grazing cattle. Three-fourths or more of all the grain raised in the county is consumed. Morgan being the first county in the State in the number of cattle fed for market, an immense quantity of grain and grass is consumed at home, leaving but little surplus of corn for shipment.

The most prominent branch of manufacturing in the county is in woolen fabrics. The woolen mills of Jacksonville (two in number), employ a capital of $500,000, and make an average of 50,000 yards of cloth per month, and the fabrics of these mills are unsurpassed by those turned out from any other factories of the kind in the West.

The number of live stock returned by the assessor for 1871, were, of horses, 7,922; cattle, 19,310; mules and asses, 1,049; sheep, 9,393; hogs, 32,205.

THE CITY OF JACKSONVILLE.

The city of Jacksonville, the county seat of Morgan county, contains a population of something over ten thousand.

The site of the city is one of great beauty, being located on an eminence overlooking, in every direction for miles away, an undulating, fertile, highly improved, picturesque and surpassingly lovely country.

The city of Jacksonville is acknowledged to be the most charming and attractive in the State, in its diversified natural scenery; its substantial, tasteful, elegant and home-like residences, surrounded with spacious, highly ornamented and improved grounds; its broad and magnificent avenues and streets, lined with stately elms and maples; its numerous large and imposing stately edifices of great architectural beauty.

Jacksonville is known, far and wide, as the "Athens of the West," and as a great educational center, certainly merits the title. Here are located the Young Ladies' Athenæum, Illinois Conference Female College, and Jacksonville Female Academy, with their five hundred young lady pupils, gathered from all parts of the West. Here, too, are Illinois College, and Whipple Academy, with their three hundred and fifty students, and public and private schools of unsurpassed excellence, with two thousand children enrolled as pupils thereof. Here, also, are the Illinois Institutions for the education of the Deaf and Dumb, the Blind, and the Feeble-minded, with their four hundred pupils.

In a population of ten thousand, there are exceeding three thousand children and adults constantly drinking at the noble fountains of learning of this, the "Athens of the West."

The public buildings of Jacksonville have been erected at a cost of $3,000,000. Here are twenty church edifices, which cost over $400,000; and which have capacity for seating over eight thousand persons, or more than four-fifths of the population of the city. Here are twenty Sabbath-schools, with a regular attendance of officers, teachers and pupils, numbering over three thousand. In literary attainments, in social refinements, in purity of morals, and in generous hospitalities, we venture to say the people of Jacksonville are not excelled. In salubrity of location, Jacksonville is blessed in an eminent degree, as is shown by the mortuary reports of the city.

In the past two years the deaths, per annum, have been less than one in sixty, or about one-half the average mortality of the continent. While devastating epidemics prevailed in almost every city in the land, no disease has prevailed here, in an epidemic form, within thirty-eight years past.

Four railroads now center in Jacksonville (the Toledo, Wabash and Western, Peoria, Pekin and Jacksonville, Jacksonville Division of the Chicago, Alton and St. Louis, and the Illinois Farmers'), which, with their numerous connections, make Jacksonville accessible from all directions, and from every part of this and the adjoining States.

The other towns of the county are Waverly, Franklin, Murrayville, Woodson, Yatesville, Prentice, Orleans, Alexander, Arcadia, Concord, Lynnville, Chapin, Bethel, and Meredosia.

JAMES FISHBACK,
For the Association.

MOULTRIE COUNTY.

OFFICERS FOR 1871.

President—Joseph E. Eden, Sullivan.

Vice-President—Elihu Wilton, Sullivan.

Secretary—Geo. W. Vaughan, Sullivan.

Treasurer—A. N. Smyser, Sullivan.

Directors—Joseph Baker, Joseph Taylor, Wm. Kirkwood, T. H. Crowder, S. P. Earp and Wm. Kliver.

Fair held at Sullivan, October 11, 12, 13 and 14, 1871. Number of entries, 135; amount paid as premiums, $476 45.

Area of Moultrie county, 336 square miles, or 215,040 acres. One-fifth of timber to four-fifths of prairie.

SOIL.—Prairie, very dark loam, interspersed with sand; very rich and productive; depth from twelve to twenty-four inches; generally level, but easily drained. Timber, light clay, interspersed with dark rich spots; very good for wheat.

The varieties of timber are the White, Burr, Black, Red and Pin Oaks; Red and White Elms; Walnut, Hickory, Ash, Cottonwood, Maple, etc. The Oaks predominate.

The most prominent branches of manufacturing are three flouring mills, one woolen factory, one wagon and carriage factory. One of the flouring mills employs a capital of twenty-six thousand dollars ($26,000). Raw material consumed sixteen thousand dollars ($16,000), exclusive of exchange. The other two (belonging to one man) have a capital employed of twenty thousand dollars ($20,000). Raw material consumed, ten thousand dollars ($10,000)—approximated. Woolen factory employs a capital of twenty-seven thousand dollars ($27,000). Raw material consumed, nine thousand five hundred and thirty dollars ($9,530). Wagon and carriage manufactory employs a capital of three thousand dollars ($3,000). Raw material, one thousand three hundred dollars ($1,300)—approximated. One of the mills is first class, and does good work; and the woolen factory is first class.

Crops generally cultivated are corn, wheat, oats and grass, sometimes rye and barley. Corn largely predominates: perhaps three-fifths of all the crops; oats about one-fifth, and wheat something less, while rye, barley and other cereals and vegetables fill up the vacuum. Corn has generally been consumed at home, but is now being shipped to market. Oats, wheat and other cereals generally shipped. Grass consumed at home.

Number of Live Stock in the county:

Horses	**6,504**
Cattle	**9,839**
Mules and Asses	**643**
Sheep	**17,857**
Hogs	**27,587**

But few diseases prevail among our stock, except hogs. Cholera (so called) has swept many of them away.

The principal towns in the county are Sullivan, Lovington, Summit and Bethany—all now railroad towns (recently, however, except Summit), two of which, Sullivan and Lovington, will have cross railroads. Sullivan is near the center of the county, and has one fine court house, two flouring mills, one woolen factory, one wagon and carriage factory, six dry goods stores, two hardware stores, two drug stores, several grocery stores, a lot of shops of different kinds, two exchange banks, two printing presses, and a number of other branches of industry. Has a population of 1,200 inhabitants, and increasing rapidly. A large opera house is almost completed, which would be a credit to any city. Also, one good seminary. Lovington is in the north part of the county. Has two or three stores, one flouring mill, and several other branches of industry; is on the Bloomington and Ohio River Railroad, where the Paris and Decatur Railroad crosses said B. and O. R. Railroad, and has a population of about 400 persons. Summit is in the southeast part of the county, on the Indianapolis and St. Louis Railroad, and has a population of about 400 persons. Bethany, on the Chicago and Illinois Southern Railroad, is a flourishing little town. Population, about 150 persons, and improving.

The population of Moultrie county is something over ten thousand, while in 1860 it was less than four thousand.

Our mines have not yet been fully developed, but are being opened. (Coal mines.) In fact our county, in general, is yet in her infancy in regard to the developments of her resources of wealth, and has not advanced as have many of her sister counties around her, on account of the much needed auxiliary—railroads; but now, being abundantly supplied with that article, she is making rapid strides to wealth and greatness, and her people have the energy and will to place her where she justly belongs: among the best in the State, according to the area. This has been evinced by the energy with which the people worked for her interests in getting located and built the railroads that insure us prosperity, population and wealth. Our soil is unsurpassed by any county in the State, and with a competence of outlets for her productions, no one need have a doubt of her future greatness. Besides the productions of the soil, enough has been developed in regard to coal to convince the most skeptical of the abundance of this article underlying the county, and of the best quality of western coal. I think the time not far distant when coal will be one of the great sources of wealth in the county.

Our county is well divided in regard to timber and prairie.

In regard to our Agricultural and Horticultural Society, would say: Have had an organization for thirteen years, and have had some splendid Fairs, and some not so good. Our Fair just past was not so well attended, as formerly, by the people, from the fact that the railroad runs through the old gounds, and we were forced to seek others. The only good chance for one was to go to the prairies; consequently, the ground being new and the weather dry, it was uncomfortably dusty, and hence the slim attendance. It was, however, well represented by stock raisers, and we had a larger amount of stock on exhibition than at any Fair previously held. We have a splendid prairie site of forty acres, and the prospects for future success were never better. We now expect to organize a joint-stock company to forward the interests of Agriculture, fix up our new Fair Ground, and try to make Moultrie Fairs equal to any in the State.

G. W. VAUGHAN,
Secretary.

PEORIA COUNTY.

OFFICERS FOR 1871.

President—Jacob Littleton.
Vice-President—O. C. Parmely.
Corresponding Secretary—Roswell Bills.
Recording Secretary—Joe H. Stevison.
Treasurer—C. P. King.

Amount of premiums paid at last Fair were about $7,000.

The Peoria County Agricultural and Mechanical Society was organized in 1855, as a county organization, and remained in the hands of the county until 1871, when the plan of organization was changed to a joint-stock company, having procured a lease of the grounds from the county. During the summer and fall of 1871 new exhibition buildings were erected, new amphitheater, dining hall, stalls, pens, etc. The Fair for 1871 was held in September, and was the largest and most successful Fair ever held on the grounds, showing the favorable change from a County Society to a joint-stock plan. The number of entries was 2,300. The Society is in a sound and prosperous condition. New subscriptions to the stock have been made since the last Fair, sufficient to pay off the debt of last year, and put the Society in good condition for holding the Fair for 1872.

The agricultural interests and advantages of Peoria county are excelled by but few counties in the State. The industrial and manufacturing interests of Peoria are not excelled by any city or county in the

West. With abundant facilities for transportation by railroad and river, an abundant supply of coal, a healthy and pleasant location, including plain, slope and bluff, a central and accessible point from all directions—Peoria can offer inducements to manufacturers second to no city in the West.

Peoria county is divided about equally between prairie and timber. The soil is generally of a rich loam. The timber is principally Oak. Wheat and corn are cultivated principally. Other grains thrive well, but wheat and corn are the leading products. The surplus grain and produce of the county finds a ready market at Peoria, or the adjacent railroad stations. The most prominent branches of manufacturing are agricultural implements, viz.: three corn-planter manufactories, three plow and cultivator manufactories, twelve flour mills, ten distilleries, one starch factory, besides many other manufactories of greater or less extent, employing several millions of capital in operating the same.

The number of live stock returned by the assessor, for 1871, is:

Horses	14,121
Neat cattle	21,027
Mules	686
Sheep	6,578
Hogs	49,230

The principal towns in the county, outside of Peoria, are:

Chillicothe,	population,	(about)	2,500
Princeville,	"	"	1,500
Elmwood,	"	"	3,000
Brimfield,	"	"	1,500
Kickapoo,	"	"	1,000

The foregoing is as near accurate as I can state it with the limited time and resources of statistics at hand.

ROSWELL BILLS,
Secretary.

PERRY COUNTY.

OFFICERS FOR 1871.

President—T. S. Elliott, Coulterville.

Vice-Presidents—James Robb, Samuel Marlow, Frank Bowls, George Robb, Frank Smith, H. F. Hempleman, Nelson Mead, S. J. Moore.

Corresponding Secretary—Wm. McNeile, Pinckneyville.

Recording Secretary—R. Berrey, Du Quoin.

Treasurer—E. B. Rushing, Pinckneyville.

Fair held at Pinckneyville, September 15, 1871. Number of entries about 1,200; amount paid as premiums, about $800.

Distinct Fair Association of Du Quoin.

[District composed of Perry, Franklin, Williamson, Jackson and Randolph counties.]

On the 7th day of June, A. D. 1870, a meeting of the citizens of Du Quoin was called to meet in City Hall, for the purpose of considering the organization of a Union or District Fair Association. At said meeting a committee was appointed, consisting of John R. Elstun, I. M. Kelly, Robert Teague, of Du Quoin, and Henry Clay, of Tamaroa, to visit the adjoining counties and solicit their co-operation in organizing an Agricultural Association. This being effected, a meeting was appointed for the 21st day of June, A. D. 1870, to meet in City Hall, to hear report from committee and consider further the propriety of effecting an organization. Mr. R. Richeson, of Franklin county, was made President, and A. J. Alden, Secretary *pro tem.* of the meeting. The President stated briefly the object of the meeting, making some very appropriate remarks in regard to agriculture and the benefits to be obtained by Agricultural Societies.

The requisite amount upon which to base a legal organization having been subscribed, the meeting proceeded to organize upon the joint stock plan, with shares of five dollars each.

A committee of ten was appointed (members of the Society) to draft a constitution and by-laws, and to report at the next regular meeting. A meeting of the stockholders was appointed for the 16th of July, A. D. 1870, to hear report of the above committee, and to elect officers for the year 1870, which resulted as follows: Dr. I. M. Neely, President; William Jackson, Vice-President; John R. Elstun, Secretary, and E. N. Smith, Treasurer. Directors, E. Onstott, Robert Teague, H. B. Plant, A. C. Brookings and John H. Moberly.

The First Annual Fair of the Society commenced Wednesday, October 17th, and continued (with daily increasing interest) the entire week.

The exhibition of horses and cattle was very large and fine. In both departments were some of the best animals in the State. The sheep and hogs were very superior; especially was it so in the latter department, as it embraced some of the premium stock that was on exhibition at the St. Louis Fair. The show of poultry was also very fine, showing that our farmers are taking some interest in this department. In textile fabrics there was a beautiful display of the fair exhibiters' taste and skill in combining the useful and ornamental. The exhibition in this department would have compared favorably with those of the State Society, and in preserves, jellies, etc., or bread and cakes, their display was second to none ever made in Southern Illinois. There was bread enough and to spare, for almost any crowd. There was not a very great show of fruit, but the specimens were very fair and fine. Flora was there in her gayest dress, delighting the eye and entrancing her admirers with her balmy fragrance.

The Art Hall was crowded to its utmost with paintings, drawings, photographs, etc., which would have done credit to any artist. The display of farm products was certainly very creditable, the show very fair, and visitors were taken altogether by surprise by the excellent quantity and quality of the grains, and the immense proportions of many of the vegetables. Agricultural implements, of all kinds, were on exhibition.

The mechanical department was well represented, and I am happy to say that Du Quoin carried off her share of the blue ribbons in this class. A very excellent and practical address was delivered by Dr. Gregory, of Champaign City, which was listened to with great attention and zest by the crowd who gathered around the stand, as also by those who were fortunate enough to obtain seats. The entries in the different departments were as follows, viz:

Horses	631
Cattle	112
Mechanical Department	66
Fruit and Flowers	41
Textile Fabrics	305
Poultry, Sheep and Swine	127
Farm Products	255
Agricultural Implements	63
Total number of entries	1600

The Society owns forty acres of land, which, to say the least, is worth $100 per acre, which is inclosed with a good and substantial pine board fence seven feet high; four hundred stalls complete, for horses and cattle; sixty-four hog pens, covered and floored; six good wells, with pumps complete; President's office, 14÷24; Secretary's office, 16+36; Floral and Art Halls, 45 feet in diameter, octagon, two stories high; Dining Hall, 24+100; Agricultural Hall, 40+100; Amphitheater, 27+216, with a twelve foot promenade the length of the entire building, with twelve booths underneath, eighteen feet each; Pagoda, twenty feet in diameter, octagon style, three stories. All the buildings are new and substantially built, and covered with pine shingles. There is also a beautiful half-mile track 50 feet wide, and of oblong shape, forming a part of the arena, where the horse, the prince of animated nature, and cattle, are brought to test their claims to the liberal prizes offered by this Association.

Owing to the fact that the Illinois State Fair was located at Du Quoin for 1871, the Society hold no Fair during the time. Stimulated by the eminent success which attended our first annual Fair, and looking forward to the encouragement that we may (or at least ought to) receive from the Illinois State Fair, I am confident that our next annual Fair will not only prove a grand success, but that it will be a triumph.

All of which is respectfully submitted.

JOHN R. ELSTUN,
Secretary.

PIKE COUNTY.

OFFICERS FOR 1871.

President—J. M. Bush, Pittsfield.

Vice Presidents—J. W. Rush, Perry; John Morris, Chambersburg.

Corresponding Secretary—John Boothby, Pittsfield.

Recording Secretary—W. H. Johnston, Pittsfield.

Treasurer—S. Grigsby, Pittsfield.

Directors—George Stebbins, B. D. Brown, Lewis Ham, B. B. Hopkins, E. N. French.

Fair held at Pittsfield, September 12, 13, 14 and 15, 1871. Number of entries 567; amount paid as premiums, $2,150.

Live stock, 100,004—no disease. Improved lands, 316,496 acres; unimproved lands, 194,828 acres. Over 63,208 acres of wheat, and 67,825 of corn; other field products, 15,830 acres, exclusive of meadow and pasture.

The Agricultural Society of Pike county is in a prosperous condition, increasing in receipts from year to year. The Society own twenty-two acres of ground, well fitted up, one-half mile from the public square.

J. BOOTHBY,
Secretary.

SALINE COUNTY.

OFFICERS FOR 1871.

President—Nelson Webber, Raleigh.

Vice-President—John H. Wilson, Harrisburg.

Secretary—John F. Conover, Harrisburg.

Treasurer—Wm. M. Christy, Harrisburg.

Directors—D. F. Ballard, Wm. W. Sargent, R. N. Warfield, C. H. Lewis, David P. Baker.

Fair held at Harrisburg, October 3, 4 and 5, 1871. Number of entries, 529; amount paid as premiums, $350.

Area of county, eighteen by twenty miles; all timber; soil, generally heavy clay. About one-third of the county is river bottom, very rich, producing heavy crops of corn, tobacco, wheat, etc.—well adapted for clover and timothy. Timber, White Oak, Walnut, Hickory, Black Oak, Cypress (on the streams) and Gum (or Billstead). Crops, corn, wheat, oats, tobacco, and castor beans, with clover and timothy. The principal crops are corn and tobacco—grain principally fed to stock. Manufactures are few, and little water power. Four coal mines, and coal in abundance. Number of live stock—horses, 3,178; cattle, 5,326; mules and asses, 1,050; sheep, 10,666; hogs, 15,714. No diseases among live stock. Five towns in the county—Harrisburg, the county seat, the largest, located in the center of the county.

There is a fair prospect of three railroads running through our county, viz: Cairo and Vincennes, Carbondale and Shawneetown, and Paducah and Danville. Our county is improving very fast, being settled up with thrifty and enterprising farmers. On the completion of the railroads we shall have as desirable a location as can be found in the State.

JOHN F. CONOVER,
Secretary.

SCHUYLER COUNTY.

OFFICERS FOR 1871.

President—John C. Scripps, Rushville.

Vice-President—Robert B. McMaster, Rushville.

Corresponding Secretary—William Hill, Rushville.

Recording Secretary—S. B. Montgomery, Rushville.

Treasurer—Wesley W. Potts, Rushville.

Directors—Henry Chadsey, Abram Lancaster, Adam Corrie, George F. Owen, Robert H. McCreery.

Fair held at Rushville, October 4, 5 and 6, 1871. Number of entries, about 1,800; amount paid as premiums, $1,100.

Our Society was organized about 1855 or 1856, under the name of "The Schuyler County Agricultural Society." We have grounds leased for fifty years, on the County Poor Farm, about one mile west of Rushville. The receipts of the Society, for each year after its organization, were about 400 or 500 dollars, up to 1867, when they reached about $1,300; for several years past they have amounted to about $1,600. Previous to our last Fair we had charged an entry fee from all exhibiters, but last year we did away with all entry fees. A consequence was, that we had the best exhibition we ever had. Our premiums amounted to about $300 more than on any previous year. Our receipts were about the same, about $1,650. The Society is in debt now about $200, on account of considerable improvements which they have been making to their grounds. This will not be necessary next year, so that they will probably be able to more than pay out.

Our county is in one of the points of the large prairies of the State. Rushville, the county seat, which is in about the center of the county, being at the extreme point where the prairie and timber meet, consequently we have some of as good prairie land as there is in the State, and also some rather poor white oak land, but most of the land is in cultivation, and good crops are raised on all of it. Rushville is the terminus of the Rushville branch of the C., B. and Q. R.R. The R., R. I. and St. L. R. R. runs about fifteen miles through the county, on the east side. We also have the Illinois river on the east, and all these afford sufficient means of transportation for our produce. There have been packed this year about 16,000 hogs in the county, besides large numbers shipped alive. Considerable quantities of wheat (mostly fall) are shipped every year; also a great many apples and other kinds of fruit. The corn is mostly consumed at home. Timber, consisting of

Oak (White and Black), Hickory, Walnut, etc., etc., is abundant in all parts of the county. Coal and rock are also abundant, some of the coal veins being over five feet thick. Total number of acres, 275,181¼.

Acres cultivated,	1871, in corn	40,254
"	1871, in wheat	17,394
"	1871, in other products	12,095
Total		69,743

Probably one-third of the above number of acres is prairie.

Number of horses, 7,819; cattle, 13,316; mules, etc., 626; sheep, 10,202; hogs, 26,993.

J. B. MONTGOMERY.
President.

STARK COUNTY.

OFFICERS FOR 1871.

President—Joseph D. Rhodes, Toulon.
Vice-President—H. H. Oliver, Toulon.
Corresponding Secretary—H. M. Hall, Toulon.
Recording Secretary—P. Nowlan, Toulon.
Treasurer—G. W. Nicholas, Toulon.
Managers—Dennis Mawly, William Nowlan, William Holgate, J. W. Searls, J. L. Newman, Henry Colwell, H. Cummings, Andrew Oliver.

Fair held at Toulon last week in September, 1871. Number of entries 2,300; amount paid as premiums, $2,000.

ST. CLAIR COUNTY.

OFFICERS FOR 1871.

President—James H. Scott, Shiloh.
Vice-President—Edward W. West, Belleville.
Secretary—G. F. Hilgard, Belleville.
Treasurer—F. H. Pieper, Belleville.
Directors—Madison T. Stookey, Joseph Ogle, Jeff. Rainey, Henry bend, Edward W. West, James A. Bornman, Belleville; George

Swaggard, Mascoutah; Thomas Winstanley, East St. Louis; James H. Scott, Shiloh; Charles T. Askins, Millstadt; Joseph Penn, O'Fallon.

The undersigned, committee appointed to prepare a statement that shall embrace answers to the inquiries raised in your circular of November 10th, 1871, feel compelled, from their limited time, to condense such facts as seem most pertinent, without giving such details as would fully represent the attractions, resources and advantages connected with our county.

The St. Clair County Agricultural and Mechanical Society was organized August 8th, 1853, and re-organized March 30th, 1867, with a capital stock of $7,500. From its formation a commendable interest has been taken by the citizens, all departments have been usually well represented, and a just pride may be felt by the faithful managers of the Society, in witnessing the vast improvements made, the superiority of domestic animals, the excellence of farming implements, and the variety and abundance of choice vines and fruits, over the former order of things—a result achieved by a laudable emulation inspired among all classes.

The Society owns twenty acres of land within the incorporated limits of the city, studded with beautiful shade trees, with substantial stalls on the west, south and eastern sides, capable of holding three hundred head of horses and cattle, the ring, in the center, one-quarter of a mile in circumference; all surrounded by a close board fence, and the amphitheater is sufficiently large to seat 6,000 people. The office and halls are ample for present purposes, with sheds for vehicles, and booths ample to accommodate the thousands who daily visit the Fair.

The grounds, with improvements, are valued at		$23,000 00
With cash on hand		234 47
		$23,234 47
Capital stock	$7,460 00	
With indebtedness	6,655 08	
		14,115 08
Profits		$9,119 39
The premiums paid last year, 1871, amounted to		$3,441 00
Number of entries, 1871, about		3,000

The Fair last year was held from the 5th to the 8th of September. This year it will commence on Monday, the 2d of September, and continue through Friday, the 6th.

From official reports we find that our county contains 439,023 acres; land unimproved, 234,544 acres; leaving 204,479 acres improved, or less than one-half.

The distribution in crops is as follows:

In wheat	97,974	acres.
In corn	53,375	"
In meadow	11,474	"
In pasture	17,187	"
Other crops	24,469	"
	204,479	"

The timber is as one-sixth to the prairie and cultivated land. The variety of timber embraces the White, Black, or Red, Sweet Chesnut, and Post Oak, with the Black Jack, White, Black and Shellbark Hickory, Ash, Soft and Sugar Maple, Sassafras, Black and English or White Walnut, Cherry, Elm, Pecan, Mulberry, Sycamore, Honey Locust, Box Alder, Paw Paw, Buckeye, Red Bud, Dog Wood, Linn, Persimmon, Haw, Hackberry, and others indigenous to Central and Southern Illinois. Our shade trees are the Black Locust, Ailantus, Catalpa, Poplar, Maples and Evergreens.

LIVE STOCK.

The number of live stock returned by the assessor, for 1871, was as follows:

Horses	7,440
Cattle	7,622
Mules and Asses	2,220
Sheep	2,971
Hogs	17,307

Our county is dotted with twenty-two neat and flourishing towns and villages, with mills, stores, blacksmith shops, and post offices, affording many facilities to the surrounding neighborhoods, with well-built and commodious school houses in every district, where the schools are kept generally ten months in the year.

POPULATION.

Belleville, the county seat, (nearly central), numbers	12,000
East St. Louis	8,000
Mascoutah	2,400
Lebanon	2,800
New Athens	1,800
Fayetteville	150
Lenzburgh	50
Alma	150
Cahokia	100
French Village	50
Brooklyn	100
Douglas	100
Darmstadt	2,000

O'Fallon	500
Smithton	600
Shiloh	100
Floraville	100
Marissa	50
Hermantown	100
Caseyville	200
Summerfield	300
Freeburg	1,000
Pittsburg	200

MANUFACTURES.

The prominent branches of manufactures are flour, iron and nails, castor and linseed oil, beer and wine.

Capital	invested	in flouring mills	$1,500,000
"	"	nail mills	280,000
"	"	oil mill	100,000
"	"	agricultural works	300,000
"	"	coke and gas works	400,000
"	"	breweries	250,000

GENERAL DESCRIPTION.

Our county embraces the Okaw river on the east, with its tributaries, the Silver and Richland creeks, on the west the Prairie du Pont, and the south Prairie de Long, with many smaller streams and branches intersecting every part, with a few never-failing springs, and may be regarded as very well watered.

There is comparatively little broken land, or land covered by lakes or ponds, that cannot be drained. The surface is undulating near the bluffs and streams, with a large proportion of level and fertile soil.

In regard to health and freedom from epidemics, no county in the State can surpass it.

There is a strata of coal underlying the greater part of the county, in depth from six to eight feet. About 600,000 tons are annually mined, with an anticipated increase of double that amount in time. This county furnishes two-thirds of all the coal used in the city of St. Louis.

In regard to the disposition of the grains, our mills consume the wheat; indeed their capacities are so great (for months running night and day) they seek further supplies from abroad, sending to all parts of the world flour of the most superior quality.

Our distilleries and breweries use up all the surplus corn and barley.

Our soil is of great variety, from the thin white Post-oak land, (excellent for wheat and vines) to the black deep soil of the American Bottom—equal in fertility to any portion of the globe. There is a tenacious clay beneath the loam, that resists the drouth, and the cereals, vegetables and fruits of all kinds are produced in great abundance and excellent quality.

Our county is intersected by seven railroads, with more projected, bringing us near the great mart of the West (St. Louis), and affording direct communication to the markets of the South, North and East.

Besides our Society, we have the Farmers' and Fruitgrowers' Association, respectable in numbers, having a library of nearly 300 volumes of well selected agricultural and horticultural works. They hold their meeting monthly.

G. F. HILGARD,
EDWARD W. WEST,
F. H. PIEPER.

SHELBY COUNTY.

OFFICERS FOR 1871.

President—James W. Ward, Shelbyville.
Vice-President—Benj. T. Keiningham, Shelbyville.
Secretary—George A. Roberts, Shelbyville.
Treasurer—Frank W. Penwell, Shelbyville.
Directors—Philip Parker, E. H. Cook, Wm. Sampson, Wm. Middlesworth, M. F. Embry.

Fair held at Shelbyville, September 6, 7, 8, and 9, 1871. Number f entries 370; amount paid as premiums, $1,200.

Our Fair of 1871 little more than paid expenses, and was not conidered a success, owing mostly to the severe drouth then prevailing, hich rendered it quite difficult to obtain sufficient water for stock. he Society is out of debt and has $700 in treasury.

The grounds are beautifully situated in the suburbs of Shelbyville, ell shaded, and provided with necessary buildings. The Society does ot own the grounds, but pays $150 per annum for their use. It is apent to every observer that there is not proper attention paid to these ual gatherings, by way of furnishing articles for exhibition. The ple of our county—and it is the same in other counties—come toer more for amusement than to gain agricultural information. ious inquiry is made as to day and time of trotting and racing ches, and, while the amphitheater is always filled with spectators, stalls and pens—containing first-class Short-horn cattle, and Berke, Poland-china, and Chester White hogs—have but few observers.

As the pecuniary success of the Fair depends upon the attendance, the Society is compelled to regulate its premiums so as to draw the greatest crowd. Our Fair has the appearance of a gala-day, rather than an Agricultural exhibition; yet, who will say this is altogether wrong? There is no race of people who labor more constantly, and have less relaxation from toil, than the Americans; and who, among us, are more diligent than the farmers? It seems to me eminently proper for them, and those of other occupations, to rest from labor a few days every year, and gather together, and not only compare with each other the results of the previous twelve months' labor and industry, but to renew friendships almost forgotten, and to cultivate social dispositions grown rusty, for want of use, in the chase after the almighty dollar.

Any one who has lived in our county a number of years, will notice a marked improvement in our agricultural resources. Our cattle, horses, sheep, and hogs, will compare favorably with the stock of any other county in the State, and our farmers know that it is cheapest to raise the best of everything. The hog cholera, which always exists more or less with us, is a draw-back to the raising of good hogs. A farmer hesitates to pay a round sum of money for a good hog that may lie down the next day and die. The hog cholera grows less dangerous every year, and is not as fatal as formerly, and, we think, will disappear in time.

Considerable wheat is raised in this county, but corn is our principal crop. A great deal is fed to stock, and much more is sold in market than formerly.

Our county is large—containing 778 square miles—and its resources are almost entirely agricultural. The Okaw river (better known, at large, as the Kaskaskia) runs diagonally through the county, and is fed by lateral streams, all lined with timber. This renders the county happily diversified with prairie and timber land, perhaps four acres of prairie to one acre of timber. A bed of coal lies under the whole county, and crops out at the surface along the river. The soil of the prairie land is the rich black loam so common to our Illinois prairies, and best adapted to the raising of corn. The soil of the timber land is a white clay, mixed with vegetable matter, often with sand—a better soil than many suppose, where rolling is better for the cereals and fruits than the prairie soil.

Every year more interest is taken in raising fruit. There is no better country for apples and pears. Cherries and peaches average a crop once in three years.

The following statement, showing some of the resources of Shelby county, is taken from the assessor's books for 1871:

	No.
Horses	13,738
Neat cattle	18,911
Mules	1,304
Sheep	38,850
Hogs	43,345
Acres of corn	92,958
Acres of wheat	31,873

There is a marked increase in everything except sheep. According to the assessor's report for 1866, there were in that year 63,281—24,431 more than reported in 1871; this diminution, as every one knows, was caused by the fall in the price of wool, which led many to slaughter their sheep for pelts and mutton.

The population of Shelby county, by the late census, was 25,529. A good class of settlers are constantly arriving. The county seat is Shelbyville, a city of 3,000 inhabitants, in which nearly all the common industrial trades are carried on.

The Shelbyville Manufacturing Company was organized in 1871, with a capital of $20,000; have a foundry and machine shops. They manufacture Kissell's corn planter, and a variety of other implements. There is also in the city a woolen factory, in active operation. The Star Flouring Mills, owned and carried on by Davis, Ward & Co., are as good, if not better, than any other flouring mills in the State. The mill was erected in 1866, by C. C. Scovil, now deceased, at a cost of $80,000, and has large storehouses attached. The city also has a public graded school. The building was erected in 1869, at a cost of $50,000. Shelbyville is located on high ground, half a mile from the Okaw River, and on the north side of the St. Louis, Alton and Terre Haute Railroad, and is believed to be one of the healthiest towns in the State. The Chicago branch of the Illinois Central Railroad passes through the county on the east, the Illinois Central Railroad on the west, the Springfield and Southeastern Railroad on the southeast, and the St. Louis, Alton and Terre Haute Railroad passes east and west through the center of the county.

Moweaqua, Oconee, Tower Hill, Windsor and Sigel are railroad towns, situated in the county, each having over 500 inhabitants.

Judging from the amount and manner in which the land in the county is cultivated, one is led to believe that the resources of the county will not be fully developed until the population of the county exceeds several times the present number.

FRANK W. PENWELL.

STEPHENSON COUNTY.

OFFICERS FOR 1871.

President—Frederick Baker, Silver Creek.

Vice-Presidents—Jacob Krohn, Freeport; J. M. Bechtel, Florence; C. W. Butterfield, Rock Run.

Recording Secretary—F. B. Malburn, Freeport.

Corresponding Secretary—S. J. Davis, Rock Run.

Treasurer—Robert Little, Freeport.

Marshal—W. T. Marshal, Freeport.

General Committee—Joseph Erbb, Jefferson; W. R. Van Brocklin, Florence; E. Ordway, S. C. Buckman, L. K. Scofield, Freeport; James Flausberg, Harlem; James Templeton, Dakota; Thomas Hunt, Ridott; Patrick Kaughman, Erin; Levi Robey, Waddams; B. Belknap, Oneco; Ira Byington, Loran; George Tompson, Lancaster; C. Roush, West Point; Legrend Cox, Winslow; Daniel Vought, Silver Creek; Stephen Seely, Rock Run; A. Raber, Kent; Thomas Pollick, Buckey; Lemuel Goodrich, Rock Grove.

The Fair (held on the 12th, 13th, 14th, 15th days of September last) was very satisfactory as to attendance and stock represented. The show of horses was very good, there being two Clydesdale, two Norman, and several fine roadsters. The show of cattle was much larger, with marked improvement in the quality. The show of hogs was very large and fine—equal to any of the State Fairs previous to the last three years. The improvement in hogs is more marked than in any other stock.

Farm implements were largely represented, with marked improvement in style and make—there being several new inventions among them; the Stover steamer and feed cooker. Our manufactories of Stover's corn cultivator, Pattison's improved corn cultivator, his improved Manny reaper and mower, and his corn sheller, are very largely distributed over the country. We have large numbers of wagons and carriages and sleighs made in this county, with some twenty grist mills, three good woolen factories, three foundries, and several cigar factories.

There is in process of erection a very large beet-sugar manufactory, to be in active operation next season. It is the Chatsworth manufactory, with large improvements. In testing the quality of the sugar beet raised here this fall, parties from France and Germany pronounce them better than those raised in their localities. We feel confident of the success of this branch of our manufactories.

Our farmers are turning their attention to raising horses, cattle and hogs. The number of sheep has fallen off largely within the last two years—over fifty per cent.

The growing of tobacco has become a large business here. The value of the crop raised this year is at least two hundred thousand dollars, and is increasing largely every year.

The soil of the county is fully equal to any in the State. The county is twenty-one by twenty-seven miles, with one-third of the land originally covered with timber, with ample water-power on the Rock Run, Cedar, Richland and Yellow Creeks, and the Pecatonica River.

The amount of stock returned by the assessors, for the year 1871, was:

Horses	10,483
Cattle	24,265
Hogs	48,065
Sheep	12,604
Mules	251

Nature has done her part here, and, if we could induce railroads to be just and taxation generous, we, as farmers, would have nothing to complain of.

SAMUEL J. DAVIS,
Secretary.

TAZEWELL COUNTY.

OFFICERS FOR 1871.

President—Josiah Sawyer, Tremont.

Vice-President—G. W. Minier, Minier.

Secretary—Seth Talbot, Jr., Tremont.

Treasurer—Joseph L. Hayward, Tremont.

Directors—Stephen Stout, A. J. Davis, L. R. Matthews, W. R. ackland, W. H. Trout, W. D. Sperry and William Hayward.

Fair held at Tremont, September, 1871. Number of entries 790; mount paid as premiums, $971; number of members, 240.

Pekin Agricultural and Mechanical Association.

OFFICERS FOR 1871.

President—B. S. Prettyman, Pekin.

Vice-President—Peter Weyhrich, Pekin.

Secretary—G. R. Cobleigh, Pekin.

Treasurer—Joshua Wagenseller, Pekin.

Directors—James Robinson, C. R. Cummings, Edward Richards, H. P. Westerman, D. C. Smith, H. W. Hiffen, John Herget, B. S. Prettyman, Peter Weyhrich.

Fair held at Pekin, September 18, 19, 20, 21 and 22, 1871. Number of entries, about 1,600; amount paid as premiums, $6,200.

Our Society was organized under the general law, with $50,000 capital—shares $25—about $25,000 now taken. We have erected buildings at a cost of some $20,000. Have eighty acres of land—cost $9,000. A full mile track, unsurpassed in the State. We owe about $9,000. Have running water to all parts of the grounds. Our county is among the most fertile in the State. Timber in abundance along the streams—generally Oak and Walnut. Corn is the great staple, marketed in Eastern cities. Large agricultural manufactories. Coal in great plenty, and some iron. Population of Pekin, 10,000.

G. R. COBLEIGH,
Secretary.

VERMILION COUNTY.

OFFICERS FOR 1871.

President—J. H. Oakwood, Catlin.

Vice-President—G. Wilse Tilton, Catlin.

Secretary—William McRay, Catlin.

Treasurer—George W. Wolf, Catlin.

Directors—James S. Sconce, John Gaines, William Sandusky, Indianolia; John R. Baldwin, Fairmount; Thomas Sandusky, William Gurling, Catlin; James M. Dougharty, Danville; F. M. Rankin, Fithian; James Rice, Pilot.

Fair held at Catlin, second week in September, 1871. Number o entries, 1,100; amount paid as premiums, $2,000.

The Vermilion County Agricultural and Mechanical Associatio was organized in 1851. The first two Fairs were held at Danville, th county seat, and were small affairs, lasting but one day. The firs Fair paid forty dollars in premiums; the second, about twice th amount.

The Fairs, from that time to the present, have been held at Catlin, small village on the Toledo, Wabash and Western Railway, seve miles southwest of Danville.

The Association has a lease on thirty acres of beautiful, undulating, timbered land, shaded with large Sugar, Walnut, Bass-wood, Oak, Hackberry, and other varieties of trees. It is naturally one of the most beautiful Fair Grounds in the State.

The number of entries is about eleven hundred each year; the number of entries has increased but little for several years, but the quality of stock, manufactured articles, etc., are making rapid improvements, from year to year.

The amount of premiums annually paid is about $2,000.

Our Fairs are largely patronized by some three counties in Illinois, and some four counties in Indiana.

This being considered the best Fair in Eastern Illinois, it is patronized by stock raisers for thirty or forty miles in every direction.

The officers of this Association have always endeavored to influence the patrons of the Fairs to raise the best quality of the useful kinds of stock, and have not, to any great degree, encouraged the raising of fast horses. The result of this policy is, that the most substantial men of the county (those pillars of society,) are the principal supporters of our Fairs, and stand by the Association through adversity as well as prosperity; and the sportsmen, who cultivate the fast horse, have a very limited influence in the management of the Fairs.

Under this enlightened policy rapid strides have been made in the improvement of our stock, as well as in the cultivation of the soil.

The neat cattle now raised in the county are among the best raised in the State, or on the continent. A number of breeders of Short Horns annually raise large numbers, and sell them to the farmers at from one hundred to five hundred dollars per head. This stock is diseminated throughout the county, until traces of it can be seen in almost every animal raised in the county. The beeves annually sent o the New York market from this county, sustain a full share of the eputation which the stock of cattle from Central Illinois has so justly arned. Many of our Short Horns have taken State Fair prizes in this nd other States. A few improved Devons have been raised in the ounty, and are considered a good breed of cattle, taking on flesh apidly, but are considered too small by most breeders.

Our stock of horses are mostly general purpose horses; many of them, owever, are too small. We have some very fine roadsters; also some xcellent heavy draft horses.

We have in this county a very fine stock of hogs, consisting of Berkhires, Poland-Chinas, and Chester Whites. Pork raising is a very rominent business, and our farmers manifest great enterprise in procuring the best breeds of swine. A common scrub hog can scarcely be found in the county.

Until within the last three years our farmers have been largely engaged in wool growing, raising the Merino sheep, but owing to the low price of wool, our flocks have been reduced to perhaps one-fourth what they were in 1865, and the attention of our farmers is now largely directed to the production of the mutton varieties of sheep, which, I think, will eventually be the leading breed raised in the county.

The number of live stock assessed in 1871, was as follows :

Horses	15,015
Cattle	31,506
Mules	1,161
Sheep	40,588
Hogs	54,433

The soil of this county is nearly all a black loam, about two feet in depth, underlaid by a yellow or brown, tough, clay subsoil, through which the water filters but slowly, retaining the water of wet seasons, much to the injury of crops on land which is not underdrained. Some portions of the county has a yellow or redish colored subsoil, quite porous, through which the water readily passes. This is our best fruit land, and also the best for winter wheat; in fact the best for all kinds of grain, but does not retain its fertility as long as the soil underlaid with the more tenacious clay. Our soil is considered nearly as good for the grasses as the celebrated blue-grass region of Kentucky, and for the production of grain, is excelled by only a few of the richest valleys of the older States. This soil being the home of the grasses, corn, wheat and oats, as a matter of course our farmers are largely engaged in stock raising, the production of beef and pork taking the lead. Nearly all the grain raised is fed to stock upon the farm where it is produced. Many of our farmers have most of their land seeded down to grass, upon which they graze large herds of cattle. Those engaged in cattle raising graze, generally, from one to two hundred head each; some, however, as many as five hundred to one thousand head. The small farmers owning, say, one hundred and sixty to two hundred acres of land, usually keep from ten to forty head of cattle, their stock being principally hogs. Nearly all farmers strive to raise hogs of the best blood. The old fashioned "prairie rooter and elm peeler" are banished from the county.

The number of acres	in wheat in 1870, was		22,797
"	"	corn	109,790
"	"	other field products	29,794

Leaving 101,000 acres, most of which is in grass.

The county is drained by the Big Vermilion River, the North, Middle, and Salt Fork of the Vermilion, the Little Vermilion, and their numerous tributaries, which thoroughly drain the surface of the county, and furnishes running stock water over a large part of the county. Along these streams grow a fine quality of timber, in quantities sufficiently abundant to supply the wants of the county for building purposes, fencing, fuel, and manufacturing purposes, as far as hard wood can be used.

Fruits of all kinds usually grow in this latitude, and are produced in abundant quantities to supply the wants of the people. Apples, cherries and the small fruits succeed best.

From the first settlement of the county, in about 1828, up to about 1845, a sufficient supply of salt was manufactured on the Salt Fork, six miles west of Danville, to supply this and adjoining counties with salt. A well was sunk about twenty feet deep, which furnished a strong brine, from which was made about five thousand bushels of salt annually. The works are now abandoned.

A large quantity and good quality of building stone is found at Danville, the county seat. In the Southwest part of the county large quantities of limestone are found, but no one has engaged in the manufacture of lime to any great extent.

The great source of mineral wealth in this county is coal. At least three-fourths of the county is underlaid with a good quality of bituminous coal, the upper vein of which is about seven feet in thickness. The coal crops out along the bluffs, at Danville, and for fully fifteen miles west. Back from the streams, on the upland, this vein of coal lays from fifty to two hundred feet below the surface, and is easily reached by shaft—water or quick-sand offering but little hindrance. Under this seam of coal is two feet of fire clay, and still further down are said to be two other veins of coal of sufficient thickness to be mined, but these have never been worked. Cannel coal in small quantities has also been found at Danville.

Coal is used in the county, almost exclusively, for fuel and for making steam. The amount of coal annually mined in this county is not far from two hundred thousand tons, worth, at the mines, three hundred thousand dollars. About one-third of this amount is consumed in the county, and the remainder is shipped by rail to other parts of this State, and to Indiana.

Although this county is well adapted to engage in manufacturing pursuits, having inexhaustible quantities of cheap fuel, and well supplied with timber and water, yet her citizens are mainly engaged in agriculture.

There are in the county one foundry and machine shop, two woolen factories, ten steam flouring mills, about twenty steam saw mills, and a number of wagon and carriage shops. Perhaps one-half the wagons and carriages used in the county are manufactured in distant localities and shipped here for sale, and all the agricultural implements are brought from other points. This being a very large county, and so extensively engaged in agriculture, the trade in agricultural implements has assumed vast proportions.

The coal and agricultural productions are attracting the attention of railroad companies. We have already completed the Toledo, Wabash and Western, Indianapolis, Bloomington and Western, the Chicago, Danville and Vincennes, and the Danville and Terre Haute Roads. The Danville and Paris, Charleston and Danville, Danville, Olney and Ohio River Railroads, are in process of construction, and a number of other roads contemplated.

All of these roads center at Danville—a city of seven thousand inhabitants, the principal coal-mining district, and the great manufacturing city—that is to be.

Besides Danville, we have fifteen towns and villages, the principal of which is Fairmount, situated in the west part of the county, a town of about six hundred inhabitants. It contains three churches, one graded school, one steam flouring mill, etc. From this point more grain is shipped than any other in the county.

Georgetown, situated in the south part of the county, has a population of about six hundred, and is surrounded by a country of unbounded fertility.

Rossville, situated in the northern part of the county, has a population of about three hundred, is surrounded by a beautiful, rich country, and has, in and around it, some of the most extensive stock raisers of the county. About nine-tenths of the county is prairie, generally high, rolling or undulating.

The great need of the county is manufactures. Our Agricultural Society is healthy and vigorous. Our coal fields are being rapidly developed. Our farmers are enterprising and thrifty. Railroads and towns are being built, and all are striving to develop the great natural resources which the God of Nature has showered down upon us with such unbounded profusion; and all are expecting the day when Vermilion county will be the banner county in the banner State of the Union.

J. H. OAKWOOD,
President.

UNION COUNTY.

OFFICERS FOR 1871.

President—John S. Lawver, Cobden.

Vice-Presidents—M. A. Goodman, James K. Walton, Anna; George W. Fink, Jonesboro.

Corresponding Secretary—Thomas F. Bouton, Jonesboro.

Recording Secretary—Joseph H. Samson, Jonesboro.

Treasurer—John E. Naill, Jonesboro.

Executive Committee—Paul Frick, Daniel Hileman, Benjamin F. Hunsaker, Jefferson S. Ury and Adam Cruse.

Fair held at Jonesboro, September 12th to 15th, 1871. Number of entries, 1,091; amount paid as premiums, $873 75.

Union county is composed entirely of woodland. About one-fourth of the county is situated in Mississippi Bottom, and is excellent corn land. Large quantities are shipped by boat every year to New Orleans. It can be shipped at the same rate from Cairo or St. Louis. This makes their crop of corn worth from 10 to 15 cents more than if it were on the Illinois Central Railroad, and had to be shipped *via* Cairo. The balance of the county is hill land, and also heavily timbered. Some of it is very broken. Most of it is well adapted to raising winter wheat, corn, oats, barley, Irish potatoes, sweet potatoes, and all kinds of garden vegetables. The higher ridges are well adapted to raising peaches, pears, apples, and all kinds of fruits.

Cobden, situated four and one-half miles from the Jackson county line, is the great fruit shipping station of the I. C. R. R. There has been as many as nine car loads of strawberries shipped from Cobden in one day. The fruit growers around Cobden had let the ground in strawberries diminish for the last few years, but within the last year have taken a new start. The quantity of peaches shipped from Union county was immense in the year 1871. On one or two days they shipped twenty-two car loads of peaches from Cobden, and averaged over twenty for two or three weeks. Large quantities of early apples are every year shipped to Chicago and other Northern markets.

Dongola, situated two miles from the Pulaski county line, is noted for the amount of country produce, which is bought and shipped to Cairo and other markets. It is surrounded by some of the best farmers of Union county.

The stock of horses in our county is much better than cattle. In the valuation of stock by the assessor of 1871, the average value of horses in Union county is higher than in any other county in the State. We either have good horses or a more honorable assessor than in many other counties in the State. We also have a very good stock of jacks and mules, and the highest valuation of any county in the State. Our show of jacks and mules at our Fair was, perhaps, quite as good as at the State Fair. In cattle we had no comparison.

Our county wheat has taken the first premium in London, and wherever it has been placed on exhibition, except at the Illinois State Fair, when held at Peoria.

J. H. SAMSON,
Secretary.

WAYNE COUNTY.

OFFICERS FOR 1871.

President—Joseph T. Fleming, Fairfield.

Vice-Presidents—N. C. Alexander, Peter Cox and William H. Robinson, Fairfield.

Secretary—Oliver Holmes, Fairfield.

Treasurer—Edward Bonham, Fairfield.

Directors—O. P. Patterson, Solomon Koontz, Ewing Young, William Shaeffer, John Sparr, Edward S. Black, R. P. Hanna, William J. Sailor, John L. Handley and Adam Rinard.

Fair held at Fairfield, October 10, 11, 12 and 13, 1871. Number of entries, 599; amount paid as premiums, $1,000.

Our Society was organized July 4, 1855. Meetings by call of President. Fairs generally held October 1st to 15th. Society not in debt. Own 40 acres, 22 inclosed, and expect to inclose the balance during the coming year. Good fence, hall, and track of one-half mile. Water plenty. Shade, stalls (boxed), and a large and commodious amphitheater, with booths underneath.

The agricultural and industrial interests of our county are on the increase. Its area is 30 by 24 miles—about two-thirds prairie and one-third good timber land. The soil is good (black sandy).

The crops cultivated are corn, wheat, oats, hay, castor beans, flax, tobacco, cotton, etc. Of fruits, the apple, peach, pear, plum, grape, cherry, strawberry, gooseberry, currant and blackberry, are in abundance.

Vegetables of all kinds do well, except when we have a drouth. Surplus of crops shipped to market.

Number of live stock returned by assessor, for 1871:

Horses	7,652
Cattle	18,682
Mules and asses	1,186
Sheep	21,795
Hogs	28,596

Carriages and wagons, 2,290; clocks and watches, 1,848; pianos, 19.

Diseases—hog cholera. No diseases at present among any other stock.

The towns in the county are: Fairfield, Jeffersonville, Johnsonville, Mt. Erie, Massilon, Enterprise, Middleton, Scottsville, Barnhill, Cisne, Rinard.

OLIVER HOLMES,
Secretary.

WOODFORD COUNTY.

OFFICERS FOR 1871.

President—Henry C. Dent, Metamora.

Vice-President—James S. Whitmire, Metamora.

Secretary—Edward Kipp, Metamora.

Treasurer—John W. Page, Metamora.

Directors—Isaac Snyder, Spring Bay; Peter A. Coen, Metamora; H. Hazen, Metamora.

Fair held at Metamora, September 12, 13, 14 and 15, 1871. Number of entries, 747; amount paid as premiums, $2,048.

WHITESIDE COUNTY.

OFFICERS FOR 1871.

President—Martin V. Seeley, Portland.

Vice-President—Ralph Sage, Erie.

Secretary—Merritt Greene, Jr., Sterling.

Treasurer—Robert W. Smith, Sterling.

Directors—C. C. Buill, R. M. Besse, D. O. Coe, J. F. Coe, S. Harvey, R. Davis, E. Brookfield, J. F. Martin, J. Pratt.

Fair held at Sterling. Number of entries, 2,000; amount paid as premiums, $3,500.

Our Fairs of 1870–71 were grand successes—well attended, and a large number of entries. Our exhibition of stock in 1871 was the best I ever saw at a County Fair, and, indeed, would compare favorably with many State Fairs. Our county has a total area of about 690 square miles. The soil in the main is a rich prairie, with some valuable timber—is fairly adapted to corn and stock raising, as well as the successful growth of an abundance of fruit. Apples were in so great a supply in the fall of 1871, that thousands of bushels of choice varieties of picked winter fruit sold at from 40 to 50 cents per bushel.

The dairy interest is large, and increasing yearly. Rock River butter, derived from the name of the stream flowing through the county, is well and favorably known in many markets. In justice, however, to the small number of entries in dairy products, I would state that while our buildings for other purposes are quite complete, there is none suitable for this.

The following is the number of entries for 1871:

Cattle, thoroughbred bulls	27	
" " cows	22	
" natives and crosses	39	
Calves	12	
Total		100
Horses, draft	24	
" all work	47	
" carriage	67	
Total		138
Sheep		35
Swine		75
Farm products		129
Poultry		28
Agricultural implements		130
Fruit		35
Preserved fruits and jellies		434
Flowers		102
Painting and drawing		32
Household fabrics		40
Needle, shell, wax and rustic work		149
Natural history		13
Dairy products		28
Cooking		65
Household implements		16
Mechanic arts		80
Miscellaneous		50
Total entries		1,679

Our county is attaining considerable prominence in its manufactures, *the principal* point being Sterling, where an immense water-power gives employment to over $1,000,000 capital. We invite to competition to our Fairs the adjoining counties of Lee, Carroll and Ogle. The average daily attendance, in 1871, was variously estimated at from 8,000 to 10,000. Our mining interest is represented by the Sterling Mineral Paint Company, large quantities of their paint being shipped daily to various points, both East, West and South.

Our Fairs show an increase in exhibition of horses, cattle, hogs and sheep, and a marked improvement in breeds.

MERRITT GREENE, Jr.,
Secretary.

THE ILLINOIS STATE AGRICULTURAL SOCIETY.

The Legislature of this State, at its twenty-seventh session, passed "An act to create a Department of Agriculture in the State of Illinois," which was approved April 17, 1871, and became a law July 1st thereafter. It provided that the business of the Department so created should be conducted by a Board, to be styled the "State Board of Agriculture," which was to consist of a President, as many Vice-Presidents as there are, or from time to time may be, Congressional Districts in the State, and the last ex-President of the State Board of Agriculture; and, further, that—

> The first Board of Agriculture under this act shall consist of the present President, Vice-Presidents, and the last ex-President of The (present) Illinois State Agricultural Society, who shall hold their positions respectively until the second Monday of January, 1873. * * * * * * The Treasurer and Secretary of The Illinois State Agricultural Society, at present, shall, respectively, be the Secretary and Treasurer of the State Board of Agriculture, and hold their positions the same time as members of the Board.

In pursuance of the act recited, and by-laws by itself enacted, the Executive Committee of the State Agricultural Society accepted the trust imposed, and re-organized as a State Board of Agriculture, and the State Agricultural Society ceased to exist.

In view of such facts, and the further one, that the volumes of Reports containing a history of the struggles and achievements of the far-seeing and large hearted men who devoted so much of their time and talents to the success of the Illinois State Agricultural Society, and the measures adopted for placing it on the highway to its unprecedented success, are out of print, it has been thought an act of justice to epitomize the material portions of the proceedings, that, otherwise, are beyond the reach of the general public.

Some of those identified with the organization and early workings of the Society are now resting from their labors, "where the tree of Life is blooming," though most of them still live to enjoy the fruits of their well-directed toil.

PROCEEDINGS OF THE CONVENTION FOR THE ORGANIZATION OF A STATE AGRICULTURAL SOCIETY.

SPRINGFIELD, *January* 5, 1853.

At a meeting of the friends of Agriculture, convened at Springfield on the 5th of January, 1853, for the purpose of forming a "State Agricultural Society," James McConnell, Esq., was called to the chair, and Charles W. Chatterton was appointed Secretary, *pro tem.*

The following names were presented as delegates to the Convention:

WHITESIDE COUNTY.—L. S. Pennington.

PIATT.—H. C. Johns.

LA SALLE.—C. R. Potter, Bronson Murray, L. W. Weston, T. L. Bullock.

MARION.—I. N. Haynie, Jas. T. Dwyer, J. M. Oglesby, C. W. Webster, A. J. Piercy.

MORGAN.—J. B. Turner, W. H. Hartly, Corridon Cox.

SANGAMON.—A. G. Herndon, A. B. Cast, J. C. Crowder, Simeon Francis, A. B. McConnell, James McConnell, G. L. Lumsden, F. Dychus, C. W. Chatterton, Job Fletcher.

LEE.—James Burney, A. R. Whitney.

On motion, all persons feeling an interest in the objects of the meeting were invited to participate in the deliberations of the Convention.

The following named gentlemen were appointed a Committee to report officers for the Convention: Messrs. Murray, Johns, Dwyer, Turner and McConnell.

The Committee recommended for President, L. W. Weston, of La Salle; Vice-President, L. S. Pennington, Whiteside; Secretary, C. W. Webster, Marion; which report was adopted by the Convention.

A communication was received from John A. Kennicott.

On motion, Bronson Murray, H. C. Johns, I. N. Haynie, J. N. Brown, W. F. M. Arny, L. S. Pennington, Corridon Cox and F. Arenz, were appointed by the chair a Committee of eight to draft a Constitution for "The Illinois State Agricultural Society."

The meeting, after hearing addresses from Prof. Turner, Hon. Silas L. Bryan and others, adjourned to meet in the Hall of the House of Representatives, at 7 o'clock P. M.

EVENING SESSION.

Convention met, pursuant to adjournment, at 7 o'clock P. M.

On motion, the Convention appointed James McBurney and James T. Dwyer, Assistant Secretaries.

The Committee appointed for that purpose reported the following Constitution; which was read, amended and adopted:

CONSTITUTION OF THE ILLINOIS STATE AGRICULTURAL SOCIETY.

The style of this Society shall be "The Illinois State Agricultural Society." Its object shall be the promotion of Agriculture, Horticulture, Manufactures, Mechanics and Household Arts.

SECTION 1. The Society shall consist of such citizens of this State as shall signify, by writing, their wishes to become members, and shall pay, on subscribing, not less than one dollar, and one dollar annually thereafter; also of honorary and corresponding members. The Presidents of County or other Agricultural Societies in this State, or a delegate from each, shall be, *ex-officio*, members of this Society.

SEC. 2. The officers of the Society shall consist of a President, nine Vice-Presidents (one to be located in each Congressional district), a Recording Secretary, a Corresponding Secretary, a Treasurer, and an Executive Committee, to consist of the officers above named and the ex-Presidents of the Society, and a General Committee, one of the members of which shall be located in each of the counties of the State.

SEC. 3. The Recording Secretary shall keep the minutes of the Society. The Corresponding Secretary shall carry on the correspondence with other Societies, with individuals and with the General Committees, in the furtherance of the objects of the Society.

SEC. 4. The Treasurer shall keep the funds of the Society, and disburse them on the order of the President of the Executive Committee, countersigned by the Recording Secretary, and shall make their report of receipts and expenditures at the biennial meeting.

SEC. 5. The Executive Committee shall take charge of and distribute and preserve all seeds, plants, books, models, etc., which may be transmitted to the Society, and shall have, also, the charge of all communications designed or calculated for publication; and, so far as they may deem expedient, shall correct, arrange and publish the same in such manner and form as they shall deem best calculated to promote the objects of this Society.

SEC. 6. The General Committee are charged with the interests of the Society in counties in which they shall, respectively, reside, and will constitute a medium of communication between the Executive Committee and the remote members of the Society.

SEC. 7. There shall be a biennial meeting of the Society on the third day of the session of the Legislature, in the city of Springfield, at which time all officers shall be elected by majority, and by ballot, with the exception of the General Committee for the counties, which may be appointed by the Executive Committee, who shall have power to fill any vacancies which may occur in the offices of the Society during the interval. Extra meetings may be convened by the Executive Committee. Nine members shall be a quorum for the transaction of business.

SEC. 8. The Society shall hold an Annual Cattle Show and Fair, at such time and place as shall be designated by the Executive Committee.

SEC. 9. This Constitution may be amended by a vote of two-thirds of the members attending any biennial meeting.

The following resolution was adopted:

Resolved, That the Constitution be presented to the members of the Convention, that they may enroll themselves as members of "The Illinois State Agricultural Society," under its provisions.

Whereupon the following persons enrolled themselves, and paid their initiation fee of $1:

Adams County—John Wood, David Wolf, Michael Collins.

Cook—John A. Kennicott.

Jefferson—John Wilbanks.

La Salle—T. L. Bullock, S. W. Weston, Bronson Murray, W. Chermesero.

Lee—James McBurney, A. R. Whitney.

Morgan—J. B. Turner, W. Brown, W. H. Hartley, Corridon Cox, Edward Lusk.

Peoria—Smith Fry, E. N. Powell.

Piatt—H. C. Johns, J. Brittenham, John G. Hubbard.

Pike—W. Ross.

Fulton—W. K. Johnson.

Greene—Giles H. Turner.

Du Page—Lewis Ellsworth.

Macon—H. Prather.

Winnebago—G. Haskell.

Marion—Silas Bryan, C. W. Webster, J. M. Oglesby, J. T. Dwyer, Urial Mills, Jesse Ray, A. J. Piercy.

Macoupin—J. M. Palmer.

McLean—Asahel Gridley, J. E. McClun, W. F. M. Arny, George Young.

Sangamon—A. B. McConnell, Alonzo Holcomb, S. B. Opdycke, J. N. Brown, J. A. Pickrell, A. B. Cast, A. G. Herndon, Pascal P. Enos, C. W. Chatterton, J. B. Pirkins.

St. Clair—W. H. Bennett.

Warren—E. A. Paine.

Whiteside—L. S. Pennington.

Menard—T. L. Harris.

Resolved, That the names of the members of the Society be called, and that they proceed to elect officers.

Whereupon,

James N. Brown, of Sangamon county, was elected President.

Geo. N. Haskell of Winnebago county, Dr. John A. Kennicott of Cook, J. E. McClun of McLean, Smith Fry of Peoria, M. Collins of Adams, Francis Arenz of Cass, H. C. Johns of Piatt, C. W. Webster of Marion, and I. Mitchell of Wayne, from the several Congressional districts, were elected Vice-Presidents.

Pascal P. Enos, of Sangamon county, was elected Recording Secretary.

Bronson Murray, of La Salle county, was elected Corresponding Secretary.

E. N. Powell, of Peoria county, was elected Treasurer.

Resolved, That the Society apply to our Legislature for an appropriation of one thousand dollars a year, for two years, and that the Chair appoint a Committee of three to apply for said grant.

Resolved, That the Committee of three, appointed by the Chair, be instructed to draft a charter for the Society, to be presented to the Legislature.

Whereupon the Chair appointed, as said Committee, I. N. Haynie of Marion county, Bronson Murray of La Salle county, and H. C. Johns of Piatt county.

Resolved, That the Chair appoint a Committee of three to draft an Agricultural address to the people of the State of Illinois.

The Chair appointed, as said Committee, Prof. J. B. Turner, Wm. Brown, and T. L. Harris.

Resolved, That five hundred copies of the Constitution, and the proceedings of this Convention, be printed, and that each member of the Society be furnished with a copy.

Resolved, That the proceedings of this Convention be published in the newspapers of this city, and in all the papers in the State friendly to the cause.

L. W. WESTON, *Chairman*.

C. W. Webster, *Secretary*.
James M. Burney,
James T. Dwyer,
Assistant Secretaries.

FIRST MEETING OF STATE AGRICULTURAL SOCIETY.

The first biennial meeting of the "Illinois State Agricultural Society" was held on the 25th of May, 1853, at the "American House," Springfield.

Capt. Jas. N. Brown, President, in the chair.

Simeon Francis was appointed Secretary, *pro tem*.

Dr. Kennicott moved that the Society hold their first annual Stoc Show and Fair the ensuing fall; which was agreed to.

Among other resolutions passed, it was

Resolved, That this Society can hold its annual Fairs at no place which will not pay the expenses of ground, fixtures and police.

Resolved, That $1,500 be appropriated for premiums.

Resolved, That it is contrary to the established principles of this Society to pay any premiums in money, except where the circumstances of the case render it indispensable; and tha such premiums be paid in books, plate and other suitable testimonials.

Resolved, That all exhibiters shall become members of this Society, with the exception of ladies, and that their contributions for exhibition shall be admitted without fee.

Resolved, That the entrance fee shall be fixed at twenty-five cents.

The Superintendents of Departments and Awarding Committees were appointed at this meeting, on the Fair Grounds.

The following is a list of names of Superintendents of Departments for Fair of 1853:

Jesse Ray	Marion county	Department 1
C. W. Webster	Marion county	" 2
J. McConnell	Sangamon county	" 3
J. McConnell	Sangamon county	" 4
J. McConnell	Sangamon county	" 5
Wm. Haskell	Winnebago county	" 6
J. A. Kennicott	Cook county	" 7
B. B. Fellows	La Salle county	" 8
C. W. Chatterton	Sangamon county	" 9
Dr. H. C. Johns	Piatt county	" 10 and 12
Bronson Murray	La Salle county	" 11
C. M. Van Deren	Sangamon county	Superintendent of Grounds

The premiums awarded at this Fair were diplomas.

The citizens of Springfield having complied with the conditions on which the Fair was to be held, by subscribing one thousand dollars to defray expenses, the Fair was held, commencing on the 11th day of October, 1853, on the grounds of the "Sangamon County Agricultural Association."

SECOND MEETING OF THE EXECUTIVE BOARD.

Fair Grounds, Springfield, *October* 10, 1853.

P. P. Enos, Recording Secretary, resigned his position, and Simeon Francis was elected by the Board to fill the vacancy.

After the payment of the premiums and the other expenses incident to holding a Fair, there was a balance left in the treasury of $111 80, and plate costing the Society $1,331 50, besides purchasing, for the use of the Society, a large tent, which cost $300.

SECOND STATE FAIR—THIRD MEETING OF EXECUTIVE COMMITTEE.

SPRINGFIELD, *January* 3, 1854.

Capt. Jas. N. Brown, President, in the chair.

Springfield was the point selected for holding the Fair of 1854, the citizens to furnish the grounds on which the Fair of 1853 was held, and to pay one thousand dollars in cash.

The Fair was fixed to commence on the 12th day of September, but the President of the Society, Capt. J. N. Brown, by his proclamation, issued August 4th, postponed it to commence on the 3d of October.

A trial of harvesting and mowing machines was ordered to be held at Bloomington, under the direction of Vice-President McClun.

A trial of corn planters and grain drills was ordered to be held at Jacksonville, under the direction of Vice-President Arenz, to commence on the 1st of May.

Three thousand dollars was appropriated for the payment of premiums at the Fair of 1854.

FOURTH MEETING OF EXECUTIVE COMMITTEE.

SPRINGFIELD, *September* 30, 1854.

Dr. John A. Kennicott in the chair.

The following are the names of Superintendents of Departments for Fair of 1854, appointed on the grounds:

Uriel Mills	Marion county	Cattle
C. W. Webster	Marion county	Horses
P. P. Enos	Sangamon county	Sheep
J. C. Crowder	Sangamon county	Swine
A. B. McConnell	Sangamon county	Poultry
H. Bristol	Sangamon county	Needle Work, etc
H. Grimsley	Sangamon county	Farm Products
B. F. Fox	Sangamon county	Farming Implements
G. W. Chatterton	Sangamon county	Metalic Fabrics
Charles Kennicott	Cook county	Horticulture
Francis Arenz		Superintendent of Grounds
T. G. Taylor		Assistant Superintendent
R. Radford		Chief of Police

A resolution was passed, unanimously, denouncing political leaders for taking advantage of the meeting of the industrial classes, during Fair week, to discuss subjects foreign to the objects of the Society.

Bronson Murray tendered his resignation as Corresponding Secretary, and Dr. John A. Kennicott was appointed to fill the vacancy.

During Fair week the Executive Committee held mass meetings of the Society at the State House, for the purpose of discussing all subjects connected with the Agricultural and Industrial interests of the State. Those meetings were largely attended, the subjects presented for discussion being, "Sectarian Schools and the Education of Farmers' Sons," "Underdraining," "Injurious Insects," "Fruit Culture," "Durability of Timber," and "Industrial Education, on the plan as presented by the Industrial League."

FIFTH MEETING OF THE EXECUTIVE COMMITTEE.

It being the Third Winter Meeting.

SPRINGFIELD, *January* 2, 1855.

The President, Capt. J. N. Brown, in the chair.

Biennial reports of the different officers were presented.

The first volume of the Transactions of the Society was ordered to be printed.

Capt. J. N. Brown's term of office being about to expire, he presented an address, in which he recapitulated the financial condition of the Society, showing that:

The gross receipts for 1853 were		$4,751 20
" " 1854 "		6,344 85
		$11,096 05
The gross expenditures for 1853	$3,898 49	
" " 1854	7,085 76	
		10,984 25
Balance		$111 80

—Besides a considerable quantity of plate and other property belonging to the Society; leaving a balance in the hands of the Society of $1,766 30.

The meeting, after seventy-one persons signed the Constitution and paid their annual fee of one dollar, then proceeded to the election of officers for the years 1855 and 1856.

Whereupon the following persons were declared duly elected:

Dr. Harvey C. Johns	Piatt county	President	
John Gage	Waukegan	Vice-President	1st District.
Lewis Ellsworth	Naperville	" "	2d District.
William Strawn	Ottawa	" "	3d District.
Smith Fry	Peoria	" "	4th District.
William Ross	Pittsfield	" "	5th District.
Francis Arenz	Arenzville	" "	6th District.
John M. Blackburn	Paris	" "	7th District.
C. W. Webster	Salem	" "	8th District.
P. L. Ward	Equality	" "	9th District.
John A. Kennicott	Cook county	Corresponding Secretary	
Simeon Francis	Springfield	Recording Secretary	
John Williams	Springfield	Treasurer	

SIXTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Second Biennial Meeting.

Springfield, *January* 4, 1855.

Dr. H. C. Johns, President, in the chair.

The Superintendents of Departments for the third annual Fair were appointed, as follows:

Capt. J. N. Brown	Cattle.
C. W. Webster and Smith Fry	Horses.
James M. Blackburn	Sheep, Swine and Poultry.
William Ross	Farming Implements.
Francis Arenz	Products of Farm, Dairy, Orchard and Garden.
John Gage	Manufactured Articles.
Lewis Ellsworth	Works of Art.

Each Superintendent of Department was authorized to make out the Premium List, and to select Awarding Committees for their respective Classes.

By-laws for the future government of the Society, and the management of Fairs, were reported and adopted, and five thousand dollars was appropriated for premiums.

This was a very important meeting of the Executive Committee—the rules and regulations which were adopted having the effect of reducing the conducting of the State Fairs to a system and order not exhibited in the first two Fairs.

The President, ex-President, Recording Secretary and Treasurer, were empowered to select the next point for holding the third annual Fair, and to make all necessary rules and regulations not now provided for.

SEVENTH MEETING OF THE EXECUTIVE COMMITTEE.

TREMONT HOUSE, CHICAGO, *October* 6, 1855.

President H. C. Johns in the chair.

The third State Fair, held at Chicago in 1855, was a complete success in every respect—the entries being more numerous, and the attendance much larger than at the two first Fairs. The gate receipts amounted to the handsome sum of $12,735, which sum, considering that the entrance fee was only 25 cents, shows that there must have been an immense interest felt, by the people in the Northern portions of the State, in the success of the Illinois State Agricultural Society.

One of the most important measures adopted by the Executive Committee, at this Fair, was its decided indorsement of the merits of the Osage Orange for hedging purposes—recommending it to the farmers of Illinois in a special resolution.

During the Fair Hon. David J. Baker delivered one of the best addresses, on the History and Agriculture of Illinois, that has ever been presented to the people of the State.

EIGHTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Fourth Winter Meeting.

SPRINGFIELD, *January* 9, 1856.

President H. C. Johns in the chair.

The Treasurer showed a balance, in favor of the Society, of $5,204 20.

Six thousand dollars was appropriated to pay premiums at the fourth annual Fair.

The following Superintendents of Departments were appointed:

William Strawn	1st	Department	—Cattle
C. W. Webster	2d	"	—Horses
J. M. Blackburn	3d	"	—Sheep, Swine and Poultry
J. N. Brown	4th	"	—Agricultural Implements
P. L. Ward	5th	"	—Farm and Garden Products
L. Ellsworth	6th	"	—Fruits and Flowers
J. Gage	7th	"	—Metals and Cabinet Ware, etc
Francis Arenz	8th	"	—Musical Instruments, Fine Arts, etc
William Ross	9th	"	—Textile Fabrics
E. R. Roe	10th	"	—Natural History
W. F. M. Arny	11th	"	—Miscellaneous
Uriel Mills	12th	"	—Plowing Match

NINTH MEETING OF THE EXECUTIVE COMMITTEE,

Held for the purpose of locating the Fourth Annual Fair.

Springfield, *April* 2, 1856.

The death of the Vice-President of the 6th Congressional district, Francis Arenz, was announced, and resolutions passed relative to deceased.

The city of Alton having made the most satisfactory proposals for holding the fourth State Fair, it was located there, to commence on the 30th September.

A communication was received from Lieut. M. F. Maury, University of Virginia, in reference to the application of meteorological observations for the benefit of agriculture—this being the same system as is now carried on with the assistance of the telegraph. The suggestions made by Lieut. Maury were heartily indorsed, by the Executive Committee, in appropriate resolutions.

The Secretary was ordered to prepare a report of the Transactions of the Society; which report is embodied in the Second Volume of the Transactions.

The Hedge question was fully discussed, and a Committee appointed to investigate the whole subject thoroughly, under instructions of the Executive Committee.

TENTH MEETING OF THE EXECUTIVE COMMITTEE.

ALTON, *October* 4, 1856.

President Johns in the chair.

The Secretary was ordered to procure a room in Springfield, in which the property of the Society could be deposited.

ELEVENTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the regular Winter Meeting.

SPRINGFIELD, *January* 6, 1857.

President Johns in the chair.

At the April meeting of the Executive Committee, it had been determined to hold a field trial of Reapers and Mowers, under the direction of ex-President Capt. J. N. Brown. The trial did not take place; but scales of points, as being in the right direction, were established for reapers, mowers and combined machines—it being about the first scale of points laid down as to the principles which should govern Committees in passing judgment on this class of machines at competing trials.

The Treasurer's report, for the years 1855 and 1856, shows that there was received—

At the Chicago Fair, 1855	$12,735 00
At the Alton Fair, 1856	9,002 95
Total amount received from all sources, for the year 1855	$14,128 80
Total expenditures for 1855	11,491 11
Receipts over Expenditures	$2,687 69
The total amount received from all sources, for the year 1856, was	$9,037 95
Total expenditures for 1856	8,354 78
Receipts over Expenditures	$683 22
Add balance left from Chicago Fair	2,637 69
Balance on hand	$3,320 91

The Constitution was amended, so that officers should be elected *viva voce*, instead of by ballot.

Three hundred and thirty-nine persons having signed the Constitution, and paid in their annual fee of one dollar, the Society then proceeded to the election of officers for the years 1857 and 1858, with the following result:

Cyrus W. Webster	Marion county	President
Horace Capron	McHenry county	Vice-President, 1st District.
Lewis Ellsworth	DuPage county	" " 2d District.
J. E. McClun	McLean county	" " 3d District.
J. H. Stipp	Fulton county	" " 4th District.
J. W. Singleton	Adams county	" " 5th District.
Andrew B. McConnell	Sangamon county	" " 6th District.
William Kile	Edgar county	" " 7th District.
S. A. Buckmaster	Madison county	" " 8th District.
Hawkins S. Ozburn	Perry county	" " 9th District.
Simeon Francis	Springfield	Corresponding Secretary
Philip Warren	Springfield	Recording Secretary
John Williams	Springfield	Treasurer

TWELFTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Third Biennial Meeting.

Springfield, *January* 9, 1857.

President C. W. Webster in the chair.

Resolutions complimentary to President Johns, Dr. Kennicott, and the retiring Vice-Presidents, were passed.

Ten thousand dollars was appropriated for the purchase of premiums to be distributed at the fifth annual Fair.

Resolutions were adopted prescribing the exact conditions to be complied with by points at which the Fair would be held.

A memorial asking for an appropriation for the benefit of the Illinois State Agricultural Society, was presented to the Legislature; and a book, for the preservation of the records of the Society, was ordered.

THIRTEENTH MEETING OF THE EXECUTIVE COMMITTEE.

Springfield, *March* 4, 1857.

President C. W. Webster in the chair.

The fifth annual State Fair was located at Peoria—to commence on the 21st of September—to continue five days.

A resolution that there be four distinct classes of thoroughbred cattle, viz: Durhams, Devons, Ayrshires, and Herefords, was passed.

A General Committee of one from each county in the State, was appointed.

A trial of reaping and mowing machines and headers was ordered, to be held at Salem, Marion county, some time in the month of June.

The following Superintendents of Departments, for the Fair of 1857, were appointed:

H. Capron	Class A—Cattle
S. A. Buckmaster	Class B—Horses
A. B. McConnell	Class C—Sheep
A. B. McConnell	Class D—Swine
A. B. McConnell	Class E—Poultry
J. E. McClun	Class F—Agricultural Implements
H. S. Ozburn	Class G—Farm Products
L. Ellsworth	Class H—Fruits and Flowers
William Kile	Class I—Mechanical
J. W. Singleton	Class K—Music and Paintings
J. H. Stipp	Class L—Textile Fabrics
S. Y. McMasters	Class M—Natural History
John P. Reynolds	Class N—Miscellaneous
Cyril Mills	Class O—Plowing Match
Smith Fry	Superintendent of Grounds.

A Committee on Farms was appointed, and books, suitable for the payment of premiums at the next annual Fair, were ordered to be purchased.

FOURTEENTH MEETING OF THE EXECUTIVE COMMITTEE,

Held during Fifth Annual State Fair.

Peoria, *September* 20, 1857.

President C. W. Webster in the chair.

A resolution was passed asking Congress to establish a Department or Board of Agriculture.

Also, a resolution for the presentation of a silver pitcher, worth fifty dollars, to the Peoria County Agricultural Society, on which was inscribed:

Presented to the Peoria County Agricultural Society, by the Executive Committee of the Illinois State Agricultural Society, as a testimonial for the beautiful manner in which they fitted up the Fair Grounds, for the Fifth Annual Fair.

Smith, Fry, Chauncey Wood and W. Comington, Esqr's., were each presented with a silver goblet of the value of twenty dollars, for their exertions in behalf of the Peoria Fair.

A mass meeting of the members of the Society was held at the Court House, Peoria, during the week of the Fair, September 24, 1857.

President Webster in the chair.

A preamble and resolutions were presented, and passed unanimously, asking Congress to grant to each State of the Union, 500,000 acres of land, for the endowment of educational institutions.

FIFTEENTH MEETING OF THE EXECUTIVE COMMITTEE,

Being the Sixth Annual Winter Meeting.

SPRINGFIELD, *January* 6, 1858.

President C. W. Webster in the chair.

The Committee on Farms reported.

The Insane Hospital farm at Jacksonville, to which was awarded the first premium, was ruled out, it being regarded as property belonging to the State, which should not be allowed to compete with private property.

Hon. H. C. Johns was nominated as one of the Vice-President of the United States Agricultural Society, to assemble at Washingto City.

Diplomas were dispensed with as premiums at future Fairs, an gold, silver and bronze Medals substituted.

A premium of five thousand dollars was offered for the best stea engine, suitable for plowing and other work.

SIXTEENTH MEETING OF THE EXECUTIVE COMMITTEE,

Held for the purpose of locating the Sixth Annual Fair.

SPRINGFIELD, *March* 9, 1858.

President C. W. Webster in the chair.

The sixth annual State Fair was located at Centralia, Marion county.

The following persons were appointed Superintendents of Classes, at the Fair to be held at Centralia:

H. CAPRON	Class A—Cattle
S. A. BUCKMASTER	Class B—Horses
A. B. MCCONNELL	Class C—Sheep
A. B. MCCONNELL	Class D—Swine
A. B. MCCONNELL	Class E—Poultry
J. E. MCCLUN	Class F—Agricultural Implements
H. S. OZBURN	Class G—Farm and Garden Products
L. ELLSWORTH	Class H—Fruit and Flowers
WILLIAM KILE	Class I—Machinery
J. G. VAUGHAN	Class K—Music and Paintings
A. MCDONALD	Class L—Textile Fabrics
S. Y. MCMASTERS	Class M—Natural History
URIEL MILLS	Class N—Plowing Match

SEVENTEENTH (CALLED) MEETING OF THE EXECUTIVE COMMITTEE.

CENTRALIA, *July* 21, 1858.

President C. W. Webster in the chair.

Resolved, That it is inexpedient to postpone the time of holding the State Fair, commencing on the 13th of September.

EIGHTEENTH MEETING OF THE EXECUTIVE COMMITTEE.

FAIR GROUNDS, CENTRALIA, *September* 13, 1858.

President C. W. Webster in the chair.

The awarding of premiums in the Miscellaneous Department was deferred until the meeting of the Board, in January.

Fawkes' Steam Plow was exhibited at this Fair, and although not a complete success, the Executive Committee, in consideration of its merits, appropriated five hundred dollars to the inventor, J. W. Fawkes.

NINETEENTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Sixth Annual Winter Meeting.

SPRINGFIELD, *January* 4, 1859.

President C. W. Webster in the chair.

S. Francis was allowed eight hundred dollars, in consideration of services as Corresponding Secretary for the year 1858.

The President was presented with a silver pitcher of the value of fifty dollars.

Cash receipts at the Peoria Fair, 1857		$12,363 91
Cash receipts at the Centralia Fair, 1858		6.874 75
Premiums paid at the Peoria Fair, 1857		$8,104 54
Premiums paid at the Centralia Fair, 1858		6,306 20
Total receipts, 1857	$15,877 91	
Total receipts, 1858	9,884 75	
		$29,088 57
Total expenses, 1857	$14,647 39	
Total expenses, 1858	13,232 69	
		27,880 08
Balance on hand, January 1, 1859		$1,203 49

TWENTIETH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Fourth Biennial Meeting of the Society.

SPRINGFIELD, *January* 5, 1859.

President C. W. Webster in the chair.

The members of the Society, under the Constitution, proceeded to the election of President, Vice-Presidents and officers for the years 1859 and 1860; which resulted as follows:

Lewis Ellsworth	DuPage county	President
C. B Denio	Jo Daviess county	Vice-President 1st District
William H. Van Epps	Lee county	" " 2d District
John Garrard	Vermilion county	" " 3d District
A. Dunlap	Peoria county	" " 4th District
J. W. Singleton	Adams county	" " 5th District
S. Dunlap	Morgan county	" " 6th District
William Kile	Edgar county	" " 7th District
S. B. Chandler	St. Clair county	" " 8th District
H. S. Ozburn	Perry county	" " 9th District
John Cook	Springfield	Recording Secretary
Simeon Francis	Springfield	Corresponding Secretary
John W. Bunn	Springfield	Treasurer

The seventh section of the Constitution was amended, by a two-thirds majority of all the members present, so as to read:

The election of officers of this Society shall be biennially, on the Fair Grounds of the Society, at the door of the office of the Recording Secretary, at two o'clock, P. M., on the third day of the Fair, by delegates of the legally organized County Societies (Agricultural) of this State. Each one of said Societies shall be entitled to three delegates, and no more. The Presidents of said County Societies shall be, *ex officio*, one of said delegates. The said officers elect of the said Agricultural Society shall enter upon the duties of their respective offices on the second Monday in January following their election. All vacancies which may occur in the offices of said Society shall be filled by the Executive Board.

A committee was appointed to revise the present Constitution and report at the next biennial meeting.

TWENTY-FIRST MEETING OF THE EXECUTIVE COMMITTEE,

It being the Fourth Biennial Meeting of the Society.

Springfield, *January* 6, 1859.

President Lewis Ellsworth in the chair.

The following persons were appointed Superintendents of Departments at the Fair of 1859:

Stephen Dunlap	Class A—Cattle
C. W. Webster	Class B—Horses
A. Dunlap	Class C—Sheep
A. Dunlap	Class D—Swine
A. Dunlap	Class E—Poultry.
William Kile	Class F—Mechanical
H. S. Ozburn	Class G—Farm Products
J. W. Singleton	Class H—Horticulture
C. B. Denio	Class I—Fine Arts

WILLIAM H. VAN EPPS	Class K—Textile Fabrics
S. B. CHANDLER	Class L—Natural History
J. GARRARD	Class M—Plowing Match
JOHN P. REYNOLDS	General Superintendent of Grounds

Two thousand dollars was appropriated for the salary of the Corresponding Secretary, for the years 1859 and 1860.

The seventh annual Fair of the Society was located at Freeport.

The Legislature passed an appropriation bill for publishing 3,000 copies of the third volume of the Transactions of the Society.

TWENTY-SECOND MEETING OF THE EXECUTIVE COMMITTEE.

SPRINGFIELD, *February* 24, 1859.

Five thousand dollars was appropriated as first and second premiums on Steam Plows.

The Freeport Fair was fixed to commence on the 5th day of September.

TWENTY-THIRD MEETING OF THE EXECUTIVE COMMITTEE.

FREEPORT, *September* 6, 1859.

President Ellsworth in the chair.

Fawkes' steam plow, "Lancaster," was exhibited during the Fair, and tested under the supervision of a Committee of scientific machinists, who, after giving it a fair examination, were compelled to report that it had not performed in such a manner as to be regarded a success; but, in consideration of the trouble and expense in attending the exhibition, a loan of one thousand dollars for one year was made to Mr. Fawkes.

The Illinois Central Railroad also offered an additional premium of fifteen hundred dollars for the best steam engine for plowing and other farm work—the trials to be made at three different points along the line of the road, and under the direction of the State Agricultural Society and a Committee of three scientific mechanics.

TWENTY-FOURTH MEETING OF THE EXECUTIVE COMMITTEE.

TREMONT HOUSE, CHICAGO, *September* 15, 1859.

President Lewis Ellsworth in the chair.

This meeting appears to have been held for the purpose of taking additional action regarding the steam plow—additional trials having been made at Chicago before the members of the Executive Committee. After giving the machine a fair and impartial trial, it was found to be too heavy, thirteen tons being the actual weight. At Freeport, on wet ground, it lost its traction power, the wheels slipping; it also slid on sideling ground. The plow broke in several instances, and finally the steam gave out, the power being inadequate to the weight of the machine and the amount of work required of it; but the Board voted an appropriation of fifteen hundred dollars to enable Mr. Fawkes to defray the expenses of the exhibition.

TWENTY-FIFTH MEETING OF THE EXECUTIVE COMMITTEE.

It being the Eighth Annual Winter Meeting.

SPRINGFIELD, *January* 4, 1860.

President Lewis Ellsworth in the chair.

John P. Reynolds was elected Corresponding Secretary to fill the vacancy occasioned by the removal of Simeon Francis, Esq., from the State.

Mr. Webster offered the following resolution, which was adopted:

Resolved, by the Executive Committee, that the Illinois State Agricultural Society pay its premiums in cash, plate, medals, agricultural implements, periodicals, or anything the Society is expected to furnish, at the option of the successful exhibiter: except, where books and periodicals are indicated in the premium list, nothing else shall be paid.

The passage of this resolution marks an important change in the payment of the premiums at Fairs. Hitherto the premiums were all paid in pieces of plate, giving a good deal of dissatisfaction to exhibiters, some of them having accumulated several thousand dollars' worth. At all subsequent Fairs the premiums have been paid mostly in cash.

TWENTY-SIXTH MEETING OF THE EXECUTIVE COMMITTEE.

Secretary's Office, Springfield, *February* 21, 1860.

President Lewis Ellsworth in the chair.

A full report on the Fawkes' Steam Plow, "Lancaster," was made by the President; the trial at Chicago having been held under the supervision of the Executive Committee.

Secretary Reynolds reported that he had rented and furnished a room for the use of the Society.

Jacksonville was selected as the point for holding the eighth annual Fair.

The Superintendents of Departments, appointed for the Fair of 1860, were—

Stephen Dunlap	Class A—Cattle
H. C. Johns	Class B—Horses
A. Dunlap	Class C—Sheep
A. Dunlap	Class D—Swine
A. Dunlap	Class E—Poultry
Wm. Kile	Class F—Mechanical
H. S. Ozburn	Class G—Farm Products
Samuel Edwards, and H. S. Overman	Class H—Horticulture
O. B. Denio	Class I—Fine Arts
Wm. H. Van Epps	Class K—Textile Fabrics
S. B. Chandler	Class L—Natural History
J. Garrard	Class M—Plowing Match

S. H. Elliott was elected General Superintendent of the grounds.

Dyas T. Parker was elected Marshal.

One thousand dollars was offered as a premium for the best steam power—to be applied in plowing, and other farm work.

The time fixed for holding the next Fair was Sept. 10th to 14th.

TWENTY-SEVENTH MEETING OF THE EXECUTIVE COMMITTEE,

This was a Special Meeting, called by President Ellsworth, for the purpose of taking measures to secure the stock-growers of the State against the ravages of *pleuro-pneumonia*.

Nicoll's Hotel, Bloomington, *June* 7, 1860.

President Ellsworth in the chair.

Resolutions, approving of Gov. Wood's proclamation relative to *pleuro-pneumonia*, and the appointment of James N. Brown as Special

Commissioner, to watch the progress of the disease in the United States, and to correspond with Jno. P. Reynolds, Secretary, from time to time as to its ravages and general character, were adopted.

TWENTY-EIGHTH MEETING OF THE EXECUTIVE COMMITTEE.

Dunlap House, Jacksonville, *August* 15, 1860.

President Ellsworth in the chair.

An invitation was extended to the United States Zouave Cadets, of Chicago, and to the Springfield Zouave Grays, to attend the Fair at Jacksonville.

The final arrangements for holding the Fair were completed with the Morgan County Agricultural Society.

TWENTY-NINTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Eighth Annual Fair of the Society.

Dunlap House, Jacksonville, *Sept.* 10, 1860.

President Ellsworth in the chair.

Fawkes' steam plow was reported by the Committee as not being adapted to farm purposes.

Capt. J. N. Brown presented a report on *pleuro-pneumonia*.

Under the amendment to the Constitution, the delegates present from the County Societies proceeded to the biennial election of officers of the Society for the years 1861 and 1862, when the following persons were elected:

Wm. H. Van Epps	Dixon	President		
C. B. Denio	Galena	Vice-President		1st District
A. J. Mattson	Prophetstown	"	"	2d District
R. H. Holder	Bloomington	"	"	3d District
R. H. Whiting	Galesburg	"	"	4th District
J. W. Singleton	Quincy	"	"	5th District
A. B. McConnell	Springfield	"	"	6th District
Wm. Kile	Paris	"	"	7th District
W. S. Wait	Greenville	"	"	8th District
H. S. Ozburn	Pinckneyville	"	"	9th District

Jno. W. Bunn	Springfield	Treasurer
John Cook	Springfield	Recording Secretary.
John P. Reynolds	Springfield	Corresponding Secretary

Board of Counselors:

Jas. N. Brown	Berlin
H. C. Johns	Decatur
C. W. Webster	Salem

Soon after the election of Mr. Denio, he removed to California, and Mr. Charles H. Rosenstiel was invited to take his place, which he accepted.

The Constitution was revised and adopted by the convention of county delegates, Sept. 12, 1860.

THIRTIETH MEETING OF THE EXECUTIVE COMMITEEE.

Springfield, *January* 9, 1861.

President Ellsworth in the chair.

The *pleuro-pneumonia* question was disposed of by resolutions.

The financial results of the years 1859 and 1860 were as follows:

Receipts at Freeport Fair, 1859	$12,053 25
Receipts at Jacksonville Fair, 1860	11,741 25
Premiums paid at Freeport Fair, 1859	$6,967 46
Premiums paid at Jacksonville, 1860	8,035 00
Total amount received from all sources, 1859	$16,814 69
Total amount paid, 1859	14,285 77
Balance on hand	$2,528 92
Total amount received from all sources, 1860	$17,348 97
Total amount paid out, 1860	18,019 85
Balance	$670 88

THIRTY-FIRST MEETING OF THE EXECUTIVE COMMITTEE,

It being the Fifth Biennial Meeting.

Springfield, *January* 14, 1861.

President Wm. H. Van Epps in the chair.

Code of by-laws framed and adopted.

Chicago was selected as the place for the annual exhibition of 1861, to commence on the 9th day of September.

A resolution was passed recommending the Legislature to appropriate one hundred dollars for each County Agricultural Society.

The Superintendents of Departments appointed for the Ninth Annual Fair, to be held at Chicago, were:

R. H. Whiting	Class A
J. W. Singleton	Class B
A. B McConnell	Class C, D and E.
Wm. Kile	Class F
H. S. Ozburn	Class G
Wm. S. Wait and John A. Kennicott	Class H
C. B. Denio	Class I
A. J. Mattson	Class K
R. H. Holder	Class L
S. H. Elliott	Class M
Wm. Butler, Lee county	General Sup't

THIRTY-SECOND MEETING OF THE EXECUTIVE COMMITTEE,

It being a called Meeting.

Tremont House, Chicago, *June* 4, 1861.

President W. H. Van Epps in the chair.

The object of this called meeting was to make final arrangements as to the Fair to be held in Chicago, in September.

Resolutions on the decease of Stephen A. Douglas, were passed, asking that his remains be deposited at Springfield. Said resolutions were signed by the following members of the Executive Committee.

Wm. H. Van Epps	President Illinois State Agricultural Society.
Lewis Ellsworth	ex-President " " " "
James N. Brown	" " " " "
H. C. Johns	" " " " "
C. W. Webster	" " " " "
John A. Kennicott	" " " Horticultural "
C. B. Denio	Vice-President 1st District.
A. J. Mattson	" 2d District.
R. H. Holder	" 3d District.
R. H. Whiting	" 4th District.
J. W. Singleton	" 5th District.
A. B. McConnell	" 6th District.
Wm. Kile	" 7th District.
Wm. S. Wait	" 8th District.
H. S. Ozburn	" 9th District.

A Committee was appointed to wait on Mrs. Douglas and present the resolutions.

THIRTY-THIRD MEETING OF THE EXECUTIVE COMMITTEE.

FAIR GROUNDS, CHICAGO, *September* 9, 1861.

President Van Epps in the chair.

Owing to the inclemency of the weather this Fair was a financial failure, compelling the Executive Committee to pass the following resolution:

Resolved, That the Corresponding Secretary be and he is hereby instructed and required to make out and deliver, on application, to those entitled to them, checks for fifty per cent. on the premiums awarded, as shown by the books of the Awarding Committees.

THIRTY-FOURTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Tenth Annual Meeting.

SPRINGFIELD, *January* 7, 1862.

President Van Epps in the chair.

A Committee was appointed to witness and report upon a trial of Fowler's Steam Plowing Machine, which was expected in Illinois the following spring.

As at Chicago, a deduction of 50 per cent. was made on all premiums awarded at this meeting—excepting premiums awarded on Essays, which were paid in full.

The publication, by the Corresponding Secretary, of a Monthly Journal, to be called the "Journal of the Illinois State Agricultural Society," was ordered.

THIRTY-FIFTH MEETING OF THE EXECUTIVE COMMITTEE.

SPRINGFIELD, *February* 25, 1862.

President Van Epps in the chair.

Chas. H. Rosenstiel was appointed to fill the vacancy in the first district: C. B. Denio, Vice-President for that district, having removed beyond the limits of the State.

Peoria was selected as the place for holding the next annual Fair of 1862.

A trial of Reapers, Mowers, Headers and Grain Binders, was ordered to be held at Dixon.

The Superintendents of Departments appointed for the Fair of 1862, were—

Mr. Whiting	Superintendent	Class A
Mr. Singleton	"	Class B
Mr. McConnell	"	Classes C, D and E
Messrs. Kile and Rosenstiel	"	Class F
Mr. Ozburn	"	Class G
Messrs. Waite and Galusha	"	Class H
Mr. Holder	"	Classes I and L
Mr. Mattson	"	Class K
Mr. Phelps	"	Class M
Mr. Capron	"	of Grounds

A trial of Reapers was held at Dixon on the 21st day of July, 1862. President Van Epps occupied the chair during the progress of the trial.

THIRTY-SIXTH MEETING OF THE EXECUTIVE COMMITTEE.

Peoria, *August* 19, 1862.

President Van Epps in the chair.

In consequence of the Fair Grounds at Peoria being in possession of the military authorities, it was deemed advisable not to attempt holding the contemplated Fair of 1862.

THIRTY-SEVENTH MEETING OF THE EXECUTIVE COMMITTEE.

[This, under the Constitution, should have been the meeting at which the officers elected on the grounds at the last Fair should have taken their seats; but in consequence of not holding a Fair, there was no election, and the President, Vice-President and officers, whose term of office expired in January, 1862, held over until the year 1864.]

SPRINGFIELD, *January* 6, 1863.

Ex-President Capt. Jas. N. Brown in the chair.

President Van Epps absent at Newbern, North Carolina, visiting his son, who was confined by sickness.

The Executive Committee and officers holding over, for the years 1863 and 1864, were—

Wm. H. Van Epps	Dixon	President
Lewis Ellsworth	Naperville	Ex-President
C. H. Rosenstiel	Freeport	Vice-President 1st District
A. J. Mattson	Prophetstown	‘‘ 2d District
R. H. Holder	Bloomington	‘‘ 3d District
R. H. Whiting	Galesburg	‘‘ 4th District
J. W. Singleton	Quincy	‘‘ 5th District
A. B. McConnell	Springfield	‘‘ 6th District
Wm. Kile	Paris	‘‘ 7th District
W. S. Wait	Greenville	‘‘ 8th District
H. S. Ozburn	Pinckneyville	‘‘ 9th District
John W. Bunn	Springfield	Treasurer
John Cook	Springfield	Recording Secretary
John P. Reynolds	Springfield	Corresponding Secretary

The report on the trial of Reapers at Dixon was presented and accepted.

THIRTY-EIGHTH MEETING OF THE EXECUTIVE COMMITTEE,

Held for the purpose of locating the Fair of 1863, and making the necessary arrangements for holding the same.

SPRINGFIELD, *February* 17, 1863.

President Van Epps in the chair.

The day fixed for holding the Fair of 1863 was the 28th September, to continue one week.

The Superintendents of Departments appointed were—

R. H. Whiting	Superintendent Class A
Jas. W. Singleton	‘‘ Class B
A. B. McConnell	‘‘ Classes C, D and E
Wm. Kile	‘‘ Class F
H. S. Ozburn	‘‘ Class G
William S. Wait and C. H. Rosenstiel	‘‘ Class H
R. H. Holder	‘‘ Classes I and L
A. J. Mattson	‘‘ Class K
C. W. Webster	‘‘ Class M

The annual Fairs of 1863 and 1864 were located at Decatur.

A field trial of implements was provided for, commencing on the 21st of September, to be held near Decatur.

THIRTY-NINTH MEETING OF THE EXECUTIVE COMMITTEE.

DECATUR, *September* 28, 1863.

President Van Epps in the chair.

C. J. Reynolds, of Dixon, was appointed Superintendent of Class A, in the absence of Mr. Whiting.

The Chairman of the Committee on Trial of Implements, held during the past week, reported.

FORTIETH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Twelfth Annual Winter Meeting.

[In consequence of a severe snow storm, there was no quorum present on the day fixed by the Constitution.]

SPRINGFIELD, *January* 8, 1864.

President Van Epps in the chair.

The Executive Committee proceeded to business without a full attendance of the Vice-Presidents.

The annual Fair at Decatur, for 1864, was fixed to commence September 12th.

The Corresponding Secretary was instructed to urge upon county societies the importance of sending three delegates to represent them in the convention which would be held during Fair week, for the election of officers for the years 1865 and 1866.

FORTY-FIRST MEETING OF THE EXECUTIVE COMMITTEE,

Held for the purpose of finishing up Business, and making the necessary arrangements for the Fair of 1864.

SPRINGFIELD, *March* 1, 1864.

President Van Epps in the chair.

The action of the Committee which met in January, and proceeded to urgent business without a quorum, was approved.

The admission gate fee, to be charged at Decatur, 1864, was made thirty cents.

The Illinois Sanitary Commission, through their Secretary, Col. John R. Woods, made application to be admitted to the Fair Grounds of 1864, and to exhibit and sell such articles as might be donated for the benefit of the Society.

Permission, as asked for, was granted, and in addition the ladies of the Commission rented the dining hall, and furnished meals to the public during the Fair—almost all the meat, poultry, fish, vegetables and groceries having been donated—the lady volunteers acting as waiters and assistants in all the departments of the kitchen and dining room.

FORTY-SECOND MEETING OF THE EXECUTIVE COMMITTEE.

DECATUR, *July* 27, 1864.

Executive Board met to examine grounds, and to give further instructions as to the preparation of halls, fixtures, etc.

FORTY-THIRD MEETING OF THE EXECUTIVE COMMITTEE,

DECATUR, *September* 13, 1864.

President Van Epps in the chair.

Convention met, under the provisions of the Constitution, for the election of President, Vice-President, and officers, for the years 1865 and 1866.

President Van Epps acted as Chairman.

The Convention then proceeded to the election, twenty-nine counties being represented. Some of the agricultural societies, not county organizations, were accepted by the Convention, making a total vote, on ballot, of 183. The result was as follows:

A. B. McConnell	Springfield, Sangamon county	President
John Wentworth	Chicago, Cook county	Vice-President State at large
George W. Gage	Chicago, Cook county	" " 1st District
R. P. Lane	Rockford, Winnebago county	" " 2d District
Chas. H. Rosenstiel	Freeport, Stephenson county	" " 3d District
Graham Lee	Hamlet, Mercer county	" " 4th District
Wm. A. Pennell	Granville, Putnam county	" " 5th District

O. B. Galusha	Lisbon, Kendall county	Vice-President	6th District
J. H. Pickrell	Harristown, Macon county	" "	7th District
G. W. Minier	Mackinaw, Tazewell county	" "	8th District
John Lasbury	Griggsville, Pike county	" "	9th District
D. D. Shumway	Taylorville, Christian county	" "	10th District
A. J. Pearcy	Centralia, Marion county	" "	11th District
S. B. Chandler	Belleville, St. Clair county	" "	12th District
H. S. Ozburn	Pinckneyville, Perry county	" "	13th District
John W. Bunn	Springfield	Treasurer	
John P. Reynolds	Springfield	Cor. and Rec. Secretary	

FORTY-FOURTH MEETING OF THE EXECUTIVE COMMITTEE.

Springfield, *January* 3, 1856.

President Van Epps in the chair.

This was the last meeting of the Executive Committee elected for the years 1861 and 1862, and in consequence of there being no convention to elect officers for 1863 and 1864, held over for those two years. In the meantime there was a new apportionment of the State. Under the census made in 1860, the State was divided into thirteen congressional districts, and a Vice-President for the State at large and thirteen Vice-Presidents, with the President and one ex-President, make up the full Executive Committee, or sixteen persons, in place of eleven, as in the Board up to January 7, 1865, when the Board, as then constituted, took their seats. In addition to this increase, all the ex-Presidents excepting the last retiring one were formed into a Board of Counselors, and took part in all the proceedings of the Executive Committee, and continued to act until this appendage to the Executive Committee was abolished.

Receipts at Chicago Fair, 1861	$9,976 50
" Reaper Trial, 1862	3,000 00
" Decatur Fair, 1863	9,641 00
" " 1864	18,368 26
Total receipts at Fairs and implement trial	$40,985 76

Paid premiums at Chicago, 1861	$3,486 50
" Decatur, 1863	4,862 00
" Decatur, 1864	8,145 58
Paid other premiums, Winter meeting	590 50
" " "	800 00
Total premiums paid, 1861, '62, '63 and '64	$17,884 58

Total receipts from all sources, 1861		$14,824 56
" " 1862		5,117 73
" " 1863		15,251 70
" " 1864		21,401 71
		$56,595 70
Total expenditures, 1861	$14,256 49	
" 1862	5,685 80	
" 1863	13,218 59	
" 1864	18,120 74	
		51,281 62
Cash balance in hands of Treasurer, January 1, 1864		$5,314 08

The following are the members of the Executive Committee, and the officers, for the years 1865 and 1866:

A. B. McConnell	Springfield	President	
W. H. Van Epps	Dixon	ex-President	
John Wentworth	Chicago	Vice-Pres. for State at large	
Geo. W. Gage	Chicago	Vice-President	1st District.
R. P. Lane	Rockford	"	2d District.
C. H. Rosenstiel	Freeport	"	3d District.
Graham Lee	Hamlet	"	4th District.
Wm. A. Pennell	Granville	"	5th District.
O. B. Galusha	Lisbon	"	6th District.
J. H. Pickrell	Harristown	"	7th District.
G. W. Minier	Mackinaw	"	8th District.
John Lasbury	Griggsville	"	9th District.
D. D. Shumway	Taylorville	"	10th District.
*A. J. Pearcy	Centralia	"	11th District.
S. B. Chandler	Belleville	"	12th District.
H. S. Ozburn	Pinckneyville	"	13th District.
John W. Bunn	Springfield	Treasurer	
John P. Reynolds	Springfield	Secretary	
M. C. Goltra	Jacksonville	Gen. Supt. of Grounds	

Board of Counselors:

Lewis Ellsworth	Naperville
James N. Brown	Berlin
H. C. Johns	Decatur
C. W. Webster	Salem

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* A. J. Pearcy deceased in 1867, but so near the expiration of his term of office that no person was appointed to fill the vacancy in the 11th District.

FORTY-FIFTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Seventh Biennial Meeting and the first held by officers elected on the Fair Grounds by Delegates from the County Societies.

SPRINGFIELD, *January* 9, 1865.

President William H. Van Epps in the chair.

The new Board took their seats.

A. B. McConnell, President elect, in the chair.

The annual Fair for 1865 was fixed to commence September 4th, to continue for six days.

The office of Marshal of the Ring was created.

The Superintendents of Departments, for the annual Fair of 1865, were as follows:

S. B. CHANDLER	Class A—Cattle
G. W. GAGE and R. P. LANE	Class B—Horses
GRAHAM LEE	Class C—Sheep
JOHN LASBURY	Class D—Hogs
JOHN LASBURY	Class E—Poultry
C. H. ROSENSTIEL	Class F—Mechanic Arts
H. S. OZBURN	Class G—Farm Products
G. W. MINIER and O. B. GALUSHA	Class H—Horticulture
W. A. PENNELL	Class I and L—Natural History and Fine Arts.
D. D. SHUMWAY	Class K—Textile Fabrics
A. J. PEARCY	Class M—Plowing Match and Implement Trial.
J. H. PICKRELL	Marshal of the Ring
I. C. GOLTRA	Superintendent of Grounds

FORTY-SIXTH MEETING OF THE EXECUTIVE COMMITTEE,

It being held for the purpose of locating the Fairs of 1865 and 1866.

SPRINGFIELD, *March* 4, 1865.

President A. B. McConnell in the chair.

The annual Fairs, for the years 1865 and 1866, were located at Chicago.

FORTY-SEVENTH MEETING OF THE EXECUTIVE COMMITTEE,

It being a called meeting for the purpose of making final arrangements for the Fair.

TREMONT HOUSE, CHICAGO, *August* 30, 1865.

President McConnell in the chair.

W. W. Boyington was appointed Assistant Superintendent of Class F.

FORTY-EIGHTH MEETING OF THE EXECUTIVE COMMITTEE,

It being held during the Fair of 1865.

TREMONT HOUSE, CHICAGO, *September* 4, 1865.

President McConnell in the chair.

Lieutenant-General Grant was invited to visit the Fair Grounds.

The cattle disease prevailing in Europe, the "Rinderpest," was considered, and resolutions passed appointing Dr. H. C. Johns, of the Board of Counselors, a special Commissioner, to watch its progress in the United States, in case it should reach us, and to make report to the Board, when deemed expedient.

FORTY-NINTH MEETING OF THE EXECUTIVE COMMITTEE.

SPRINGFIELD, *January* 3, 1866.

President McConnell in the chair.

The Fair of 1866 was fixed for the 24th of September.

The 3d day of January (should be the 5th day) being the 13th anniversary of the formation of the Illinois State Agricultural Society, Captain J. N. Brown made some remarks in relation to the first meeting.

The Board of Counselors, to whom was referred the subject of the cattle plague, made a report on the same.

The Superintendents of Departments for the annual Fair of 1866, were as follows:

S. B. Chandler	Superintendent	Class A
Geo. W. Gage and R. P. Lane	"	Class B
Graham Lee	"	Class C
John Lasbury	"	Classes D and E
C. H. Rosenstiel and A. J. Pearcy	"	Class F
H. S. Ozburn	"	Class G
G. W. Minier and O. B. Galusha	"	Class H
Wm. A. Pennell	"	Class I
D. D. Shumway	"	Class K
Wm. A. Pennell	"	Class L
J. H. Pickrell	Marshal of the Ring	

FIFTIETH MEETING OF THE EXECUTIVE COMMITTEE.

Called by the President.

Springfield, *February* 13, 1866.

President A. B. McConnell in the chair.

Premiums were offered on scoured wools.

A trial of implements was ordered, for the 4th day of September.

John P. Reynolds was appointed a delegate to the Universal Exposition, to be held at Paris, in 1867.

FIFTY-FIRST MEETING OF THE EXECUTIVE COMMITTEE.

Essex House, Mattoon, *Sept.* 3, 1866.

President McConnell in the chair.

A trial of implements was had at this meeting.

FIFTY-SECOND MEETING OF THE EXECUTIVE COMMITTEE,

Tremont House, Chicago, *Sept.* 24, 1866.

President McConnell in the chair.

Reports on the trial of Implements were made by the different Committees.

Report on scoured wools was presented.

CONVENTION OF DELEGATES FROM COUNTY SOCIETIES,

Held at the Secretary's Office on the Fair Grounds.

Chicago, *Sept.* 26, 1866.

President A. B. McConnell in the chair.

On motion of Captain J. N. Brown, one of the Board of Counselors, the Board of Counselors was abolished.

The Executive Committee and officers, for the years 1867 and 1868, were then elected, as follows:

A. B. McConnell		President		
H. D. Emery		Vice-President	State-at-large	
Geo. W. Gage	Chicago	‘‘	‘‘	1st District
Moses Dean	Sycamore	‘‘	‘‘	2d District
C. H. Rosenstiel	Freeport	‘‘	‘‘	3d District
Graham Lee	Hamlet	‘‘	‘‘	4th District
E. H. Clapp	Rome Farm	‘‘	‘‘	5th District
O. B. Galusha	Lisbon	‘‘	‘‘	6th District
Wm. Kile	Paris	‘‘	‘‘	7th District
G. W. Minier	Mackinaw	‘‘	‘‘	8th District
J H. Spears	Tallula	‘‘	‘‘	9th District
D. D. Shumway	Taylorville	‘‘	‘‘	10th District
Uriel Mills	Salem	‘‘	‘‘	11th District
D. B. Gillham	Alton	‘‘	‘‘	12th District
H. S. Ozburn	Pinckneyville	‘‘	‘‘	13th District
John W. Bunn		Treasurer		
John P. Reynolds		Secretary		

FIFTY-THIRD MEETING OF THE EXECUTIVE COMMITTEE.

SPRINGFIELD, *January* 9, 1867.

President A. B. McConnell in the chair.

The Committees appointed on Implement trial at Mattoon made full reports on threshing machines, gang plows, two-horse plows, two-horse independent cultivators, trench plows, horse and hand-power corn shellers, and grain drills.

The death of A. J. Pearcy, Centralia, Vice-President from the 11th district, was announced.

Vice-Presidents Chandler and Wentworth being absent, and Pearcy deceased, Messrs. Ellsworth, Clapp and Mills were invited to take their places and meet with the Board.

Resolutions relative to the establishment of the Industrial College were adopted.

The financial statement for 1865 and 1866 was as follows:

Cash receipts at Chicago Fair, 1865		$20,424 98
" " " 1866		13,069 85
		$33,494 73
Paid premiums at Fair, 1865		$8,204 00
" " 1866		7,209 55
		$15,413 55
Cash receipts from all sources, 1865		$28,739 06
" " " 1866		16,913 19
		$45,652 25
Total expenditures, 1865	$23,831 84	
" " 1866	18,456 94	
		42,288 78
Cash in treasury, Jan'y 1, 1867		$3,363 47

The Executive Committee, and officers for 1867 and 1868, were—

A. B. McConnell	Springfield	President		
W. H. Van Epps	Dixon	ex-President		
H. D. Emery	Chicago	Vice-President	State-at-large	
Geo. W. Gage	Chicago	"	"	1st District
Moses Dean	Sycamore	"	"	2d District
C. H. Rosenstiel	Freeport	"	"	3d District
Graham Lee	Hamlet	"	"	4th District
E. H. Clapp	Rome Farm	"	"	5th District
O. B. Galusha	Lisbon	"	"	6th District
Wm. Kile	Paris	"	"	7th District
G. W. Minier (resigned)	Mackinaw	"	"	8th District

David A. Brown*	Bates	Vice-President		8th District
John H. Spears	Tallula	"	"	9th District
D. D. Shumway	Taylorville	"	"	10th District
Uriel Mills	Salem	"	"	11th District
D. B. Gillham	Alton	"	"	12th District
H. S. Ozburn (deceased)	Pinckneyville	"	"	13th District
D. T. Parker †	Cairo	"	"	13th District
John W. Bunn	Springfield	Treasurer		
John P. Reynolds	Springfield	Secretary		
M C. Goltra	Jacksonville	General Sup't of Grounds		

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* Elected by Board to fill vacancy occasioned by resignation of G. W. Minier.

† Elected by Board to fill vacancy occasioned by demise of H. S. Ozburn.

FIFTY-FOURTH MEETING OF THE EXECUTIVE COMMITTEE.

It being the Eighth Biennial Meeting since the organization of the Society.

Springfield, *January* 14, 1867.

President A. B. McConnell in the chair.

The Board elect for 1867 and 1868 took their seats and proceeded to business.

The Fair was located for two years.

Quincy was selected as being the most eligible point for holding the Fairs of 1867 and 1868.

The Superintendents of Departments for the Fair of 1867 were

Moses Dean	Superintendent	Class A
George W. Gage and John H. Spears	"	Class B.
Graham Lee	"	Class C
Uriel Mills	"	Classes D and E
Chas. H. Rosenstiel and H. D. Emery	"	Class F
H. S. Ozburn	"	Class G
O. B. Galusha	"	Class H
G. W. Minier	"	Classes I and L
D. D. Shumway	"	Class K
M. C. Goltra	"	of Grounds
D. B. Gillham	Marshal of Ring	
Ex-Pres. Wm. H. Van Epps, V. Pres. Kile and Clapp	Reception Committee	

The admission fee to Fair Grounds was raised to fifty cents.

The Fair was originally fixed to commence on the 23d of September, but was changed to the 30th.

FIFTY-FIFTH MEETING OF THE EXECUTIVE COMMITTEE.

FAIR GROUNDS, QUINCY, *September* 30, 1867.

President McConnell in the chair.

The resignation of G. W. Minier, Vice-President from the Eighth Congressional District, was presented and accepted.

The report of Mr. Lee, Chairman of Committee on Wool Scouring, was presented.

FIFTY-SIXTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Sixteenth Annual Winter Meeting since the organization of the Society.

SPRINGFIELD, *January* 7, 1868.

President McConnell in the chair.

David A. Brown, of Bates, was elected to fill the vacancy occasioned by the resignation of G. W. Minier.

The next annual Fair was fixed to commence on Monday, September 21.

The Committee on Farms, consisting of Dr. Wm. Kile, Clapp and Mr. Lee, were appointed.

Mr. Emery, Vice-President for State-at-large, being absent, Mr. Goltra was requested to take a seat with the Board.

The Superintendents appointed for the Fair of 1868 were—

MOSES DEAN and D. A. BROWN	Class A—Cattle
G. W. GAGE and J. H. SPEARS	Class B—Horses
GRAHAM LEE	Class C—Sheep
URIEL MILLS	Classes D and E—Swine and Poultry
WM. KILE	Class F—Mechanic Arts
H. S. OZBURN	Class G—Farm Products
O. B. GALUSHA	Class H—Horticulture
H. D. EMERY	Classes I and L—Fine Arts and Nat. H.
D D. SHUMWAY	Class K—Textile Fabrics
WM. H. VAN EPPS and G. W. GAGE	Class M—Equestrianism
D. B. GILLHAM	Marshal of the Ring
W. H. VAN EPPS, C. H. ROSENSTIEL and E. H. CLAPP	Reception Committee

A resolution was passed prohibiting trials of speed by racing.

An Auditing Committee for the approaching Fair, consisting of E. H. Clapp and Chas. H. Rosensteil, was appointed.

FIFTY-SEVENTH MEETING OF THE EXECUTIVE COMMITTEE.

FAIR GROUNDS, QUINCY, *September* 19, 1868.

President A. B. McConnell in the chair.

The decease of H. S. Ozburn was announced, and obituary resolutions passed.

Cyrus W. Webster was appointed to take charge of Class K, Textile Fabrics, in the absence of Mr. Shumway.

Dyas T. Parker, of Cairo, was appointed to take charge of Class G, Farm Products, H. S. Ozburn, Superintendent, having deceased.

Dyas T. Parker was elected to fill the vacancy in the 13th district, occasioned by the decease of H. S. Ozburn.

CONVENTION OF DELEGATES FROM COUNTY SOCIETIES.

The Convention of Delegates, from the county and other agricultural societies, met for the purpose of electing officers of the Society for the years 1869 and 1870.

A. B. McConnell, President of the Society, called the Convention to order.

Adjourned to the Club House.

Fifty-eight counties were represented, when, on ballot, the following officers were declared duly elected:

Wm. Kile	Edgar county	President
H. D. Emery	Chicago	Vice-President State at large
A. H. Dolton	Dolton Station	“ “ 1st District
Moses Dean	Sycamore	“ “ 2d District
C. H. Rosenstiel	Freeport	“ “ 3d District
Graham Lee	Hamlet	“ “ 4th District
A. J. Dunlap	Galesburg	“ “ 5th District
Emory Cobb	Kankakee	“ “ 6th District
J. G. Taylor	Decatur	“ “ 7th District
D. A. Brown	Bates	“ “ 8th District
J. H. Spears	Tallula	“ “ 9th District
M. C. Goltra	Jacksonville	“ “ 10th District
C. W. Webster	Salem	“ “ 11th District
D. B. Gillham	Alton	“ “ 12th District
D. T. Parker	Cairo	“ “ 13th District
John P. Reynolds	Springfield	Secretary
John W. Bunn	Springfield	Treasurer

The Constitution was amended so as to add the Secretary to the Executive Committee.

FIFTY-EIGHTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the last Meeting of the Board elected for 1867 and 1868.

SPRINGFIELD, *January* 5, 1869.

President McConnell in the chair.

The decease of Captain James N. Brown, the first President of the Illinois State Agricultural Society, and one of its officers during its existence until 1867, was announced by Vice-President D. A. Brown, who, in an obituary address, paid tribute to the memory of this old pioneer. A Committee was appointed to frame and report obituary resolutions.

The Texas Cattle Disease was made the subject of some strong resolutions.

A testimonial of a piece of plate was voted to the retiring President, A. B. McConnell.

The financial statement for the years 1867 and 1868 is as follows:

Cash received at Quincy Fair, 1867		$23,253 35
Cash received at Quincy Fair, 1868		13,028 75
Total receipts at Fairs, 1867 and 1868		$36,282 10
Paid in premiums, 1867		$10,608 14
Paid in premiums, 1868		7,649 50
		$18,257 64
Total cash receipts from all sources, 1867		$32,974 82
Total cash receipts from all sources, 1868		16,028 75
Total receipts for 1867 and 1868		$49,003 57
Total expenditures for 1867	$24,906 65	
Total expenditures for 1868	20,191 92	
		45,098 57
Balance in hands of Treasurer, January 1st, 1869		$3,905 00

The Executive Committee and officers for 1869 and 1870 were—

WM. KILE	Paris	President	
A. B. MCCONNELL	Springfield	ex-President	
W. D. EMERY	Chicago	Vice-President	State at large
A. H. DOLTON	Dolton Station	‘‘ ‘‘	1st District
MOSES DEAN	Sycamore	‘‘ ‘‘	2d District
C. H. ROSENSTIEL	Freeport	‘‘ ‘‘	3d District
GRAHAM LEE	Hamlet	‘‘ ‘‘	4th District
A. J. DUNLAP	Galesburg	‘‘ ‘‘	5th District
EMORY COBB	Kankakee	‘‘ ‘‘	6th District
JOHN G. TAYLOR	Decatur	‘‘ ‘‘	7th District
D. A. BROWN	Bates	‘‘ ‘‘	8th District

JOHN H. SPEARS	Tallula	Vice-President	9th District
M. C. GOLTRA	Jacksonville	" "	10th District
C. W. WEBSTER	Salem	" "	11th District
D. B. GILLHAM	Alton	" "	12th District
D. T. PARKER	Cairo	" "	13th District
JOHN P. REYNOLDS	Springfield	Secretary	
JOHN W. BUNN	Springfield	Treasurer	

FIFTY-NINTH MEETING OF THE EXECUTIVE COMMITTEE,

It being the Ninth Biennial Meeting.

SPRINGFIELD, *January* 11, 1869.

President McConnell in the chair.

Dr. William Kile was introduced, and assumed the chair.

The by-laws and rules for the transaction of business were amended.

The annual Fair was fixed to take place on the 20th day of September.

The Superintendents of Departments appointed for the Fair of 1869, were:

MESSRS. BROWN and MCCONNELL	Class A
MESSRS SPEARS and COBB	Class B
MR. LEE	Class C
MR. TAYLOR	Class D and E
MESSRS. GOLTRA and DUNLAP	Class F
MR. PARKER	Class G
MR. DOLTON	Class H
MR. EMERY	Class I and L
MR. WEBSTER	Class K
MR. GILLHAM	General Superintendent of Grounds
MESSRS. ROSENSTIEL and DUNLAP	Auditing Committee

SIXTIETH MEETING OF THE EXECUTIVE COMMITTEE,

Held for the purpose of locating the Fairs for 1869 and 1870.

SPRINGFIELD, *February* 23, 1869.

President Kile in the chair.

The annual Fairs, for 1869 and 1870, were located at Decatur.

SIXTY-FIRST MEETING OF THE EXECUTIVE COMMITTEE.

PRIEST HOUSE, DECATUR, *September* 27, 1869.

President Kile in the chair.

This meeting was occupied with business growing out of the Fair for 1869.

SIXTY-SECOND MEETING OF THE EXECUTIVE COMMITTEE,

SPRINGFIELD, *January* 4, 1870.

President Kile in the chair.

The time for holding the next annual Fair was fixed to commence on the 24th of September.

New by-laws were adopted.

The Superintendents of Departments, for the Fair of 1870, were:

The President and ex-President MCCONNELL	Committee of Reception
MR. BROWN	Class A
MR. SPEARS	Class B
MR. LEE	Class C and E
MR. TAYLOR	Class D
MR. GOLTRA	Class F—Section 1, Inside of Hall
MR. DUNLAP	Class F—Section 2, Outside of Hall
MR. EMERY	Class G
MR. DOLTON	Class H, I and L
MR. WEBSTER	Class K
MR. PARKER	Marshal of the Ring
MR. COBB	Superintendent of Forage
MR. GILLHAM	Superintendent of Grounds and Chief of Police.
MESSRS. DEAN and ROSENSTIEL	Auditing Com. in charge of Tickets and Gates.

Side shows were excluded from the Grounds.

The report from the Committee to memorialize the State Constitutional Convention, now in session at Springfield, was adopted.

SIXTY-THIRD MEETING OF THE EXECUTIVE COMMITTEE,

Held during the Fair, 1870.

President Kile in the chair.

A special ring was opened for imported draft stallions, on petition of twenty exhibiters.

Prize package candy, or any thing in the nature of a lottery, was prohibited.

CONVENTION OF DELEGATES FROM COUNTY SOCIETIES.

FAIR GROUNDS, DECATUR, *September* 28, 1870.

The Convention of Delegates from County and other Agricultural Societies in the State, met at the Secretary's office, for the purpose of electing officers of the Illinois State Agricultural Society for the years 1871 and 1872.

President Wm. Kile called the Convention to order.

After the Committee on Credentials had made their report the Convention adjourned to Powers' Hall.

POWERS' HALL, DECATUR, *September* 28, 1870.
7½ O'CLOCK P. M.

Seventy-six County and other Agricultural, Mechanical and Horticultural Societies reported, and elected the following officers:

David A. Brown	Springfield	President	
Jno. P. Reynolds	Chicago	Vice-President at large	
A. H. Dolton	Dolton Station	Vice-President	1st District.
James Herrington	Geneva	"	2d District.
C. H. Rosenstiel	Freeport	"	3d District.
Geo. Edmunds, Jr	Sonora	"	4th District.
A. J. Dunlap	Galesburg	"	5th District.
Emory Cobb	Kankakee	"	6th District.
J. R. Scott	Champaign	"	7th District.
S. D. Fisher	Atlanta	"	8th District.
D. W. Vittum, Jr	Canton	"	9th District.
M. C. Goltra	Jacksonville	"	10th District.
C. W. Webster	Salem	"	11th District.
D. B. Gillham	Alton	"	12th District.
D. T. Parker	Cairo	"	13th District.
A. M. Garland	Chatham	Secretary	
John W. Bunn	Springfield	Treasurer	

SIXTY-FOURTH MEETING OF THE EXECUTIVE BOARD.

It being the last Meeting of the Board for 1869 and 1870.

SPRINGFIELD, *January* 3, 1871.

President Kile in the chair.

The Committee on Farms reported.

The Financial Statement for the years 1869 and 1870, is as follows:

Cash receipts at Decatur Fair, 1869		$20,502 70
" " 1870		20,020 10
		$40,522 80
Paid premiums, 1869		$9,227 79
" 1870		10,558 28
		$19,785 97
Cash received from all sources, 1869		$27,407 70
" " 1870		23,184 75
Total receipts for 1869 and 1870		$50,592 45
Total expenditures for 1869	$20,584 74	
" 1870	21,536 53	
		42,121 27
Balance in the hands of the Treasurer, January 1, 1871		$8,471 18

ABSTRACT OF METEOROLOGICAL OBSERVATIONS,

MADE AT PEORIA, DEC., 1855, TO NOV., 1871.

BY FRED. BRENDEL.

COMPARATIVE TABLE OF TEMPERATURE, TAKEN FROM OBSERVATIONS DURING SIXTEEN YEARS: DECEMBER, 1855—NOVEMBER, 1871.

	Mean.	Before s'nrise.	7 A. M.	2 P. M.	9 P. M.	Maximum.	Minimum.	No. of frost days.
December	28.7	24.1	24.1	33.4	28.4	67	.13	24
January	25.1	19.8	19.8	30.5	25 4	65	.22	27
February	29.5	23.9	23.9	35.6	29 4	71	.20	22
Winter	27.7	22.5	22.5	33.1	27.7	71	.22	73
March	38.7	31.8	32.7	45.4	38	79	.6	17
April	51.8	42.8	45.7	59.3	46.9	89	16	5
May	63 5	52.7	58.5	71.7	61.4	97	30	0.25
Spring	51.3	42.2	45.6	58 8	48 8	97	.6	22
June	73.4	62.8	67.6	81.4	71.4	100.5	35.5	0
July	77.5	67.2	71.6	85 4	75.5	104	48	0
August	74.7	64.8	68.4	82.7	72.8	102	41	0
Summer	75.2	65	69.2	83.2	73.2	104	35.5	0
September	66.6	57.8	60	74.8	64.9	97.5	34	0
October	53.3	45.6	46.4	61.6	51.8	90.5	14	3.5
November	39.7	34.2	34.2	45.9	39.1	73.5	1.5	14.5
Fall	53.2	45.8	46.8	60.7	51.9	97.5	1.5	18
Year	52	44	46.2	59.1	50.5	104	.22	113

These observations are made with a centigrade glass thermometer (without any brass on it), suspended free in the shade, the results reduced to the Fahrenheit scale, which is in use—we must regret it—in this country, but should be given up as soon as possible, being quite arbitrary, without any natural foundation. The mean temperatures are computed from the three observations at 7 A. M., 2 P. M. and 9 P. M., just to agree with the other observations made for the Smithsonian, but the result does not represent the true mean, the lowest temperature being excluded from the calcule for nine months. The nearest to the true mean would be the result from the maximum and minimum, and two observations made at equally distant hours, and would be somewhat lower.

The mean temperature of the same date of the sixteen years was calculated, and the highest mean found to be 80 for the 16th of July, the lowest, 18, for the 23d of December. For the fourteen first years of observation, these days of highest and lowest mean had been the 7th of August and 7th of January; but the last two years changed the position of these days. Of the single days, the highest mean had the 2d of August, 1861, with 91.7; the lowest, the 1st of January, 1864, with —13.7; the highest temperature observed was 104, on the 15th of July, 1859; the lowest, —22, on the 8th of January, 1864.

The march of temperature, up and down, is steady in Spring and Fall; but in Summer and Winter there are some marked oscillations. When we divide the month in three decades, we find that the first decade of August is the warmest, and the first decade of January the coldest; further, that the last decade of July is cooler than the two other decades of that month, and the first decade of February is nearly as cold as that of January, and very much colder than the last decade of January.

The last frost occurs in Spring, between the first of April and 11th of May; and the first frost between the first of October and 31st of October. The mean number of days between the last and first frost day is 180; but this does not involve that this period is not shorter in the surrounding country, as the observations are made in the lowest and mildest place of a city.

COMPARATIVE TABLE OF LATEST AND FIRST FROST DAYS.

	1856.	1857.	1858.	1859.	1860.	1861.	1862.	1863.
Last Frost	April 13	May 11	April 26	April 23	May 1	April 19	April 6	April 8
First Frost	Oct. 1	Oct. 20	Oct. 9	Oct. 9	Oct. 12	Oct. 24	Oct. 24	Oct. 6
Number of days between both.	170	161	165	168	163	187	200	180

COMPARATIVE TABLE—*Continued.*

	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.
Last Frost	April 20	April 24	April 7	May 8	April 18	April 14	April 17	April 1
First Frost	Oct. 9	Oct. 28	Oct. 31	Oct. 24	Oct. 8	Oct. 13	Oct. 31	Oct. 28
Number of days between both.	171	186	206	168	172	181	196	209

NOTE.—Under "Frost days," is understood a day on which the thermometer reaches the freezing point. There is not meant the so-called white frost, which occurs sometimes when the thermometer is above freezing point.

COMPARATIVE TABLE OF BAROMETER.

	7 A. M.	2 P. M.	9 P. M.	Mean.	Maximum.	Minimum.	Greatest change in 24 hours.	Pressure of vapor—in inches.		
								7 A. M.	2 P. M.	9 P. M.
December	29.695	29.665	29.694	29.684	30.329	28.906	1.017	0.182	0.147	0.139
January	29.692	29.658	29.689	29.680	30.671	28.928	0.865	0.105	0.136	0.127
February	29.664	29.628	29.653	29.648	30.453	28.823	0.884	0.130	0.152	0.149
March	29.611	29.575	29.597	29.594	30.364	28.721	0.950	0.167	0.192	0.186
April	29.563	29.526	29.545	29.545	30 252	28.717	0 872	0.246	0.266	0.271
May	29.545	29 507	29.524	29.525	29 917	28.670	0.750	0.355	0.274	0.300
June	29.594	29.550	29.565	29.570	29.907	28.996	0.479	0.535	0.542	0.569
July	29.599	29.562	29.571	29.577	29.901	29.207	0.389	0.622	0.634	0.661
August	29.628	29 589	29.599	29.605	29.965	29.207	0.492	0.591	0.606	0.639
September	29.672	29.625	29.645	29.647	30 082	29.169	0.556	0.466	0.503	0.497
October	29.655	29.605	29.635	29.632	30.254	29.025	0.710	0.279	0 297	0.299
November	29.651	29.608	29.644	29.634	30.225	28.857	0.838	0.188	0.203	0.193
Year	29.631	29.591	29.618	29.612	30.364	28.670	1.017	0.318	0.338	0.348

These observations are made with a Green barometer, in a cylindrical brass case, with the thermometer attached. The observations are reduced to the freezing point, according to Guyot's tables. As the table shows, the highest pressure of the atmosphere occurs in December, at 7 A. M.; the lowest in May, at 2 P. M.; but the pressure of vapor contained in the atmosphere is highest in July at 9 P. M.; the lowest in January at 7 A. M. The most sudden changes occur in December, the slightest in July.

COMPARATIVE TABLE OF RAIN AND SNOW FALL AND HUMIDITY OF THE ATMOSPHERE,

	Amount of rain, or melted snow, in inches.	Number of days with rain or snow.	Relative humidity of the atmosphere in per ct. of saturation.		
			7 A. M.	2 P. M.	9 P. M.
December	2.64	8.6	88	70	81
January	1.66	6.7	90	71	82
February	2.00	7.8	88	66	82
Winter	6.30	23.1	89	69	82
March	3 02	9	80	58	75
April	2.94	9.7	75	52	69
May	3.60	9.5	74	50	70
Spring	9.56	28.2	76	53	71
June	3.00	8.6	77	51	72
July	4.00	8.8	78	53	74
August	3.55	7.7	82	53	76
Summer	10.55	25.1	79	52	74
September	3.30	9	85	57	77
October	2.22	7	84	53	74
November	2.28	8	85	62	78
Fall	7.80	24	85	57	76
Year	34.21	100	82	58	76

The distribution of rain would be very favorable, if it would be in the single years as the table shows; but this is not so every year. In 1856, we had only 22.77 inches, and in 1858 the amount was 50. We had long drouths—as last fall, when from the 29th of August to the 8th of October, we had only one rainy day, with 0.65 of an inch of rain, and weeks with endless rainfall, as in 1858, when from the 29th of April to the 10th of June, we had 27 rainy days, with 15.70 inches of rain.

COMPARATIVE TABLE OF CLOUDINESS AND SUNSHINE.

	7 A. M.	2 P. M.	9 P. M.	Mean.	Cloudy.	Mod'ly cloudy.	Very cloudy.	Without sunshine	Hours of sunshine.	F'm rise to set in pr. ct.
December ...	59	58	50	55.7	4	10	17	9	129	45
January	58	56	48	54	3	11	17	9	133	46
February	52	57	50	53	3	11	14	7	149	51
Winter	56	57	49	54	10	32	48	25	411	47
March	52	55	48	51.7	3	12	16	6	182	50
April	51	58	45	51.3	2	13	15	4	192	49
May	45	50	33	42.7	3	15	13	3	269	61
Spring	49	54	42	48.5	8	40	44	13	643	58
June	39	44	28	37	2	19	9	1	316	71
July	38	47	27	37.3	1	20	10	1	314	69
August	39	47	28	38	2	18	11	1	299	71
Summer ...	39	46	28	37.4	5	57	30	3	929	70
September...	48	49	33	43.3	4	13	13	2	216	58
October	47	47	33	42.3	5	13	13	5	202	59
November ...	55	58	50	54.3	3	10	17	9	148	51
Fall	50	51	39	47.3	12	36	43	16	566	56
Year.......	48	52	39	46.7	35	165	165	57	2550	58

The cloudiness is taken by estimation, and the figures express the percentage of covering of the sky. It is more covered at noon than in the morning, and least in the evening; more in winter than in summer. From 1858 to 1868 the hours of sunshine were noted daily, and above means computed. The sum of hours from sunrise to sunset is about 4,390 in the year; 2,550 is the mean number of hours of sunshine per year, that makes 58 per cent. In that way the percentage was taken for every month. The days without sunshine, noted extra, are contained in the column "very cloudy," too.

COMPARATIVE TABLE OF WIND, DEC., 1856—NOV., 1871.

Reduced to 1000 *per month, season and year.*

	West.	S.West.	South.	S. East.	East.	N. East	North.	N.West
December	303	99	194	35	139	74	85	71
January	318	104	215	22	96	60	98	81
February	304	69	214	30	113	78	127	65
Winter	308	91	208	29	116	70	103	75
March	287	68	187	34	162	88	106	69
April	251	59	212	24	170	91	130	63
May	197	54	286	50	202	82	138	41
Spring	245	60	212	36	178	87	124	58
June	218	61	290	50	227	52	67	35
July	161	67	292	42	199	92	100	47
August	189	47	357	32	253	91	122	44
Summer	189	58	279	42	226	79	85	43
September	138	38	300	37	218	81	149	44
October	245	88	214	27	159	75	132	60
November	302	71	222	32	128	74	101	70
Fall	228	66	245	32	167	77	127	58
Year	242	69	236	35	172	78	110	58

COMPARATIVE TABLE OF HIGH WINDS, GALES AND HURRICANES.

Whole number for fifteen years.

	West.	S.West.	South.	S. East.	East.	N. East	North.	N.West
December	12	2	……	……	3	……	……	1
January	11	2	……	……	1	……	……	……
February	19	5	5	1	3	……	……	……
March	18	7	7	1	2	3	……	……
April	18	10	5	……	2	8	……	1
May	9	6	4	2	……	2	2	1
June	6	4	2	……	……	1	……	……
July	6	4	2	……	……	……	……	3
August	……	……	1	……	……	……	……	1
September	1	1	5	……	……	……	1	……
October	11	5	7	1	……	2	……	2
November	14	2	5	3	……	2	……	1
Year	125	48	43	8	11	18	3	10

COMPARATIVE TABLE OF WIND, IN CONNECTION WITH CLOUDINESS.

Percentage of Covering of the Sky.

	West.	S. West	South.	S. East	East.	N. East.	North.	N.West
December	36	46	60	63	72	83	60	64
January	35	41	60	58	72	86	62	73
February	32	48	56	50	61	91	61	53
March	33	48	58	50	60	84	56	65
April	42	34	52	64	57	72	46	53
May	35	54	40	53	41	60	47	55
June	32	52	34	44	38	61	36	47
July	34	44	37	37	34	44	39	34
August	31	48	36	43	32	60	39	44
September	34	51	38	34	38	74	46	58
October	35	34	43	56	44	71	39	66
November	41	50	52	67	55	87	53	70
Year	35	46	43	49	49	71	49	63

COMPARATIVE TABLE OF WIND, IN CONNECTION WITH RAIN AND SNOW FALL.

Sums for fifteen Years.

	West.	S. West.	South.	S. East.	East.	N. East.	North.	N. West
December	20	18	38	7	40	39	19	13
January	8	6	42	3	23	28	16	14
February	11	9	29	7	23	45	24	7
March	17	18	46	5	33	45	25	11
April	24	9	34	7	39	34	16	10
May	18	18	42	10	36	29	27	10
June	23	24	40	17	27	14	4	7
July	23	22	38	9	23	21	12	7
August	16	16	31	3	24	28	11	11
September	22	8	51	1	33	31	20	6
October	21	12	41	6	18	27	17	11
November	23	9	42	10	22	39	4	10
In 15 years	226	169	484	85	336	380	195	117
Per cent	11	9	24	4	17	19	10	6

The observations of wind comprise fifteen years. The first year of observation is omitted, because not reliable.

From October to April the prevailing wind is from the west; in the summer months from the south.

The force of wind was not measured, but estimated only; and no table is given, except for the high winds, gales and hurricanes. The most violent hurricane occurred on the 13th of May, 1858, from the west. Generally the west and southwest are the strongest winds, and February, March and April are the most windy months.

The direction of wind was compared with the cloudiness of the sky, and the figures in the table express the percentage of covering at the time of observation of a certain wind. 100 means an entirely covered, and 0 a cloudless sky. Northeast brings the most, West the least cloudiness.

Maury, in his Geography of the Ocean, remarks, that his question about the rain was answered by the Western farmers, unisono: "We get our rain from the southwest." The result of these observations is different, as the table shows. The Western farmer does not care about wherefrom the rain comes, except at the time he needs it most—after a long time of dry weather in summer—and then, indeed, most of our thundershowers come from the southwest. But the witness of the Western farmers cannot be introduced as an argument for the theory of Maury, though that theory seems to be true. The rain which falls in the Mississippi Valley might probably be derived from the Southern Pacific; but, in the most cases, it seems to pass our region as vapor, and first be condensed into clouds in the cooler region of the lakes, and, augmented by the vapors from the lakes, come back by northeast winds, which show, next the south winds, the biggest figures and more cloudiness than any other wind.

ABSTRACT OF METEOROLOGICAL OBSERVATIONS,

MADE AT SANDWICH, ILLINOIS—1852–1870.

By N. E. BALLOU, Observer.

The following Meteorological Abstract, embracing twenty years, is elaborated from more than 75,000 observations. It embraces in its scope a variety of information of vast importance to the Agriculturist and the Horticulturist, as well as the Meteorologist. Twenty years is sufficient to establish the mean temperature, the mean rain fall, and the prevailing winds of any locality. These conclusions are reached from the crucible of natural law, which is fixed and unvarying, and lead us to a thoughtful contemplation of the Superintending Agency which bespoke the law into existence for our happiness and well being, and the more we become acquainted with the complicated nature beyond our sphere, in the vast system of worlds, the more are we impressed with the power that originated it.

Latitude 41 *Deg.* 31 *Min.*; *Longitude* 88 *Deg.* 30 *Min.*; *Hight, above Sea-Level,* 665 *Feet.*

1871,	Jan.	Feb.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	1871.
THERMOMETER—Monthly Mean	23.8	26.9	38.8	51.5	69	70.6	73.9	73.2	68.4	51.8	31.9	17.6	48.9
Highest Degree	60	48	67	80	90	98	95	96	90	85	51	43	98
Lowest Degree	.4	.12	25	30	37	52	54	45	32	21	.3	.20	.20
Range	64	60	42	50	53	46	41	51	58	64	54	63	118
Warmest Day	12	23	15	18	31	1	18	15	3	3	5	31	Aug. 15
Coldest Day	13	10	3	1	4	30	21	31	30	28	25	20	Dec. 20
Cloudiness (10 being perfect cloudiness)	5.14	4.75	5.15	5.12	4.24	4.25	4.75	4.87	4.65	3.48	6.17	4.41	4.74
WINDS.........North	1⅓	0⅔	3	1⅓	3⅔	3⅔	2	2⅔	2⅔	2	3⅓	1⅓	24½
Northeast	0⅔	2	1⅔	4	9⅓	6	5	6⅓	7⅔	1⅓	1⅓	0	57⅔
East	1⅓	3	4	1⅓	1	3⅓	4	2⅓	2	2	5	0⅓	8⅔
Southeast	1	1⅔	0⅔	0	6	3	1	3⅓	0⅔	2	2⅔	3	24⅔
South	7	3	3⅓	2⅔	3	2⅔	2	1	3	5	2⅓	2⅔	59⅔
Southwest	2⅓	2⅓	3⅓	5⅓	3	0⅓	2⅔	2	3	6	2⅓	2⅔	57
West	6⅔	8⅔	6⅓	7⅔	2⅓	5⅔	10	7⅓	4⅔	10	6	13⅔	59
Northwest	10⅔	7	8⅔	4⅔	2⅔	6⅓	4⅓	6	6⅓	2⅔	7	7⅓	74
Total of each Month	31	28	31	30	31	30	31	31	30	31	30	31	365
Prevailing Winds	N W	W	N W	W	N E	N W	W	W	N E	W	N W	W	N W
Force of Winds	3.05	3.11	2.35	2.49	2.17	2.26	2.21	2.38	1.85	2.80	2.17	2.78	2.46
WEATHER......Fair Days	6⅔	7⅔	6⅓	5⅔	12	8⅓	7⅔	12	14	15	8⅓	13	132
Cloudy Days	24⅓	20⅓	24⅔	24⅓	19	21⅔	23⅓	19	16	16	21⅔	18	233
Total of each Month	31	28	31	30	31	30	31	31	30	31	30	31	365
Rain	2	2	6	8	11	9	6	5	1	6	4	1	61
Rain and Snow	2	3	1	0	0	0	0	0	0	0	0	7	7
Snow	6	6	2	0	0	0	0	0	0	6	4	7	31
Amount of Water in Inches	4.35	1.35	3.11	2.10	2.15	6.08	2.06	2.38	0.40	5.04	3.70	3.45	36.17
Last Frost of Spring	....	....	....	18	....	....	....	....	....	....	....	....	April 18
First Frost of Autumn	....	....	....	....	....	....	....	....	20	....	....	....	Sept. 20
Total Number of Days between Frosts	....	....	....	12	31	30	31	31	29	....	....	....	155

METEOROLOGICAL OBSERVATIONS.

		1870.	1869.	1868.	1867.	1866.	1865.	1864.
THERMOMETER—	Yearly Mean	49.4	47.1	46.1	46.8	45.5	48.8	47.3
	Highest Degree	100	90	97	97	96	95	95
	Lowest Degree	—16	—7	—25	—20	—23	—8	—26
	Range	116	97	122	117	119	103	121
	Warmest Day	June 29	July 24	July 1	Aug. 12	July 16	July 5	July 24
	Coldest Day	Jan. 23	Feb. 5	Feb. 10	Jan. 29	Feb. 16	Jan. 8	Jan. 7
	Cloudiness, 10 being perfect	4.93	5.23	4.53	4.50	5.07	4.77	5.21
WINDS	North	28⅓	24⅓	37	28⅔	30	27⅔	40⅔
	Northeast	68⅓	57⅔	49⅓	42⅓	41	35⅓	47⅔
	East	28	8⅔	21⅔	28⅓	29⅔	35⅓	42⅓
	Southwest	24	24⅔	28	24⅔	27	36⅔	35⅓
	South	32⅔	59⅔	48⅓	62	44	53	35⅔
	Southwest	48⅓	57	50⅔	42⅔	42⅔	38⅔	43
	West	78	69	55	70⅔	74⅓	64	47⅓
	Northeast	57⅓	74	76	65⅔	70⅓	74	75
	Total of each year	365	365	366	365	365	365	366
	Prevailing Winds	W	N W	N W	W	N W	N W	N W
	Force of Winds	2.31	2.15	2.05	2.04	2.13	2.96	2.77
WEATHER	Fair Days	140	110	117⅔	150	118⅓	110⅔	106
	Cloudy Days	225	255	248⅓	215	246⅔	254⅓	260
	Total of each Year	365	365	366	365	365	365	366
	Rain	58	61	57	55	77	74	56
	Rain and Snow	10	10	11	7	6	8	7
	Snow	32	21	18	22	23	24	14
	Amount of Water in inches	28.32	41.17	22.80	31.44	30.70	27.55	27.55
	Last Frost of Spring	April 29	May 7	May 20	May 26	April 13	May 11	May 11
	First Frost of Autumn	Sept. 11	Sept. 28	Sept. 17	Sept. 11	Sept. 21	Oct. 3	Sep. 19
	Total No. Days bet. Frosts	135	144	114	116	161	142	131

ANNUAL RESULTS—Continued.

1863.	1862.	1861	1860.	1859.	1858.	1857.	1856.	1855.	1854.	1853.	1852.
50.7	48.5	49.8	49.5	48.8	49.5	48.4	45.5	47.4	49.3	47.0	48.5
95	98	98	98	100	105	102	105	102	102	94	98
—10	—18	—10	—23	—21	—26	—22	—30	—20	—18	—9	—10
105	116	108	121	121	131	124	135	122	120	103	108
Aug. 16	Aug. 5	Aug. 7	July 15	July 17	July 9	July 12	July 25	Aug. 8	July 16	Aug. 10	July 10
Feb. 1	Jan. 18	Jan. 31	Dec. 28	Dec. 31	Feb. 23	Jan. 23	Jan. 10	Dec. 30	Jan. 23	Jan. 29	Jan. 25
4.83	4.98	5.18	4.41	4.88	4.71	5.01	4.68	4.70	4.64	5.10	4.90
26	22⅓	21	28⅓	31	27	20⅓	12⅔	28⅓	31⅔	43⅓	50⅔
37	49⅓	34⅓	52⅔	61⅓	30⅔	38⅔	41⅓	48	45	55⅓	48⅓
20⅔	23⅔	27	32⅓	20⅓	25⅔	25⅔	20	26	27	19⅓	13⅔
31	23⅓	37	34	56⅔	26⅔	21⅓	20⅔	24⅓	25⅔	22⅔	18⅔
58⅔	57⅔	53⅓	49	37⅔	21⅔	20⅔	20⅓	15⅓	18⅓	34⅓	30⅔
56	56⅓	56⅔	47⅓	50	86⅓	87⅓	80⅔	101	125	110⅔	105⅔
69⅔	79⅓	88	57⅔	32	55⅔	50⅓	35⅓	35	36⅔	45⅓	40⅓
66	53	47⅔	64⅔	76	91⅓	100⅔	135	87	55⅔	34	58
365	365	365	366	365	365	365	366	365	365	365	366
W	W	W	N W	N W	N W	N W	N W	S W	S W	S W	S W
1.88	1.77	1.42	1.51	1.88	1.99	2.16	2.09	2.05	2.57	2.10	2.81
109⅔	110⅔	88	72⅓	81⅓	99⅓	111⅓	131⅓	126⅓	128	131⅓	159⅓
255⅓	254⅓	277	293⅔	283⅔	265⅔	253⅔	234⅔	238⅔	237	233⅔	206⅔
365	365	365	366	365	365	365	366	365	365	365	366
69	74	74	85	75	78	81	84	75	76	80	85
6	12	6	12	10	15	11	8	9	8	7	9
25	28	24	23	19	20	22	20	15	13	29	30
53.06	58.41	58.37	35.09	48.58	45.81	46.28	47.08	48.10	40.90	35.49	36.51
May 7	April 24	April 17	April 15	July 4	May 18	May 12	April 29	May 11	May 8	May 12	Apr. 20
Aug. 28	Sept. 25	Sept. 28	Oct. 8	Sept. 11	Sept. 4	Sept. 23	Oct. 1	Oct. 3	Oct. 5	Sept. 28	Sep. 14
113	154	164	146	77	109	134	155	145	155	139	147

THE EDUCATION OF AMERICAN FARMERS.

By PROF. J. B. TURNER, Jacksonville.

I wish to show why, and how it is, that almost the entire force of our common schools tends to throw our young men away from the shop and the farm, and to drive them into the scholastic professions; or pile them up, in huge stacks of agents, clerks, and office-seekers; or send them "prospecting" to California, or "carpet-bagging," down South.

If your patience will indulge me, I would like to show it, in such detail and minuteness of description, as would enable each one of us to attempt to institute the needed reform, in his own school district. I deem this the very highest service, which I can here and now render, either to this congress,* or to the republic at large. Since farmers will be, like all other men, what their *real* education makes them: neither more nor less.

The vital moving force, the power and the glory of modern society, consists in its capacity of voluntary co-operation. The voluntary co-operation of the voters of this Union, in upholding our free institutions, is indeed one of the most unique and sublime spectacles in the history of our race. But the voluntary co-operation of all the forty millions of men, women and children, of this wide republic, to uphold some system of common schools, to prepare the rising generation for their duties and their destinies, in the republic, greatly transcends it. Nothing to be compared with it, was ever seen or heard of before, in the history of man.

I most fully sympathize with the sentiments of an eminent and sensible American citizen, who, after three years wandering in Europe, in search of some better place to educate his children, than our own country can afford, declared that "there was something in our American school houses, and the moral atmosphere which surrounds them, which he had missed, in all his wanderings over Europe; and that for making your average man and woman of solid utility, the public school system of America is the very best appliance on the planet."

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* Read before National Agricultural Congress at St. Louis, Mo.

"The *cui bono* is never lost sight of; and in a country like ours this is the great desideratum: the most precious heritage any average boy or girl could possess."

These remarks, I trust, will sufficiently guard me from all suspicion of hostility to our American common school system, while I attempt to point out some of its remaining defects and dangers, especially as related to our great agricultural and industrial interests.

In all things earthly, the dangers and perils are ever in proportion to the good and the power involved.

We have, indeed, elaborated a true system, the true mechanism both of government and of education; at least the outline of it; and that is blessing and glory enough for one people and one age of men to achieve. But it will take many generations to come, to fully perfect the practical use, and handling, and running of either of them. It is well, perhaps, that we feel the remaining evils and defects of both, more keenly than we realize the good they already bring us. It incites us to our best endeavors for the future. In accordance with this, there is a wide-spread feeling that our schools are not doing all for us, especially for the people in the rural districts, which they ought to do.

A committee of the Massachusetts Legislature, where our whole system originated, and where it has been carried to greater perfection than perhaps in any other State, report that "the results of their system of schools is not satisfactory;" and that "the public school system of New England *fails* to meet the demands of modern civilization."

The great uprising of the industrial classes, and their new attempts at founding schools, all over the republic, whatever may be said or thought of their work, shows the same fact. Along side of our efforts to confine children, through all their young and growing years, to school-rooms, and the abstract studies in books, the nervous system has become either excessively developed or diseased; insanity has greatly increased; a whole crop of brain and nervous diseases are said to have sprung up, some of which are not developed till late in life; females n particular become inert, weak, and nervously diseased; indisposed nd incapacitated for the real duties of the wife and the mother: nsomuch that the most highly educated races are perpetually running ut, and giving place to races of less, so-called culture, but of greater stalwart vigor; all of which tends to show that we may be making hem over into angels, a little too fast for the good of earth and time; r if not, it betokens widespread distrust and doubt, not of our present ystem as such, but of our present mode of running it. The general complaint, that children are kept in school so continuously, that they become dull and listless, and although immense sums of money are expended upon the schools, that they do not after all leave them as well fitted for the real duties of life, as they used to do in half the time, and at less than half the expense, shows the same general fact of uneasiness, under our present administration.

Now how much of all this is real; how much is cause, and how much only accidental coincidence, it is impossible at present to fully determine; but I know of no thoughtful man who thinks of abandoning our American system, as such, on account of these evils, even if they all exist, no more than we think of abandoning our republican form of government, because we cannot yet make it run to suit us.

However great these evils may be, or may not be, one great vital and all important end of our school system, is, after all, being perpetually realized and attained, whatever else may fail; our children are learning those habits of *self-government* and *self-restraint* in public, in crowds, and acquiring a sort of homogeneity in manners, tastes and feelings, which could never be learned at home; and which perhaps tends to conserve and perpetuate the freedom of the republic more than all else combined. At least this is generally true; true in almost all cases, except where the parents themselves are perpetually encouraging the truancy of the school room, by siding with the folly of their children, keeping them out of the schools, or in some way interfering with their proper success and discipline, lest their own pet darlings should be soiled, or harmed. They seem to assume that their children are better than other people's. The very assumption is enough to ruin the children, for all proper uses of a republic like ours; and it generally does it.

But I wish to point out some of the evils that have grown up under our system, that more particularly affect the farmers and the industrial classes in the rural districts of the republic.

I. The first that I will mention is the *curse* of *thoroughness, so-called;* which is really not genuine, but a sham thoroughness. In a phylosophical point of view, a child cannot go thoroughly into any subject whatever, and it is utterly absurd to attempt to make him do it. It would not be more absurd to attempt to glue tassels and ripe ears upon a corn stalk, as soon as it is out of the ground, in order to make a sort of a dumb show of an early harvest, and seem to outstrip the old fogy pace of your neighbors. A child's thoroughness, in any such sense, is all a mere sham—mere wind and words, and nothing else. More than that, it is a curse that may and will weight him down in all after life.

Nature requires, every where, that things should slowly grow into all organisms, physical, mental, and moral; they can neither be pounded into them, nor glued or tied on to them. It is as absurd to attempt to teach a child what a man ought to know, as it would be to attempt to make him lift or eat what a man does. He cannot safely even begin those forms and modes of knowledge that are peculiar to riper years; or if he does, he begins at the peril of his physical or intellectual well being, or both. He may, indeed, seem to be a prodigy when he is young, but he will be dead, or a fool, before he grows old. Long continued wearisome and exhaustive attention to any subject whatever, is unsuitable for a child, under pretense of giving them something to do. Something to do!! whoever saw a young child idle? I would like to see one. Something to do!! why, has he not got all the flies of the house, and all the butterflies of the field to catch and examine; his top, and skates, and whip, to mend and to spin, and ten thousand other things to do, that no mortal else ever thought of? Has he not got to stand on his head, knock his hat-crown in, and wear holes in his shoe-toes, knees and elbows? Look into a boy's drawer, where he keeps his own peculiar "*school apparatus*," and you will find out that he has got enough planned out to do for a life-time. Has he not got to eat tons of green apples and other course vegetable and animal products, and before he is a dozen years old, to transform all this rough garbage into at least one hundred pounds of good, solid human bones, muscles and nerves; so firmly, and yet so delicately elaborated, that they are fit for an angel's use? All these things which he now contrives to do for himself, help him forward in this first, greatest, and most important part of all his life-work on earth. When will it get through our stupid scholastic heads, that the first duty of every born man and woman on earth, both to God and man, is to eat, to drink, to rolic, and to grow? And if they are simply shielded from harm, and kept out of unendurable mischief, and allowed to do it, much in their own way, it is the best thing we can do for them, or with them, for well nigh the first ten years of their life. Some little general shaping of their course, some power of reading, some "Kindergardon" care, either in school or out, and better out all the time than in, more with reference to varying their tastes and employments, and improving their moral feelings, than in hope of making them savans in anything, is about all we can safely do for them.

In a world where no man on earth thoroughly knows how a candle burns or a blade of grass grows, or his own eyes see, what consummate folly to attempt to make a mere child thorough in anything. Nature and Nature's God, give a child a sort of birds-eye view of a vast variety of things in their most simple and natural relations, without protracted or profound views of anything. This is *their* programme of education; and my experience is, that Nature and Nature's God, after all, are not half as apt to blunder in the long run, as the sciolists and savans are.

According to the official advertisement of Harvard University, published in "The Nation" of April 4, 1872, it would take a pupil thirty-nine years to go through, in regular succession, with all the courses of science and literature distinctively marked out for public patronage in that single school; besides these, there are numerous irregular or incidental side courses of lectures, etc. The pupil would pass through the hands of some scores, if not hundreds, of teachers of distinct sciences and arts, before he completed his long peregrination. In all this no one supposes that he would be thorough in any one single study, science or art. He would come out, entering at 15 years of age and graduating at 55, a mere tyro in every thing, thorough in nothing; having as yet received an introduction to only the barest elements, the mere nomenclature, only the dead tools, of the living languages, arts, and sciences of the world, and would not become, after being most thoroughly schooled all his life, the tenth part of a scholar, nor the hundreth part of a man in any one thing. How utterly preposterous is it, then, to think of making a mere child thorough in anything, or of giving to any born man a knowledge of the nomenclatures and tools of universal science, unless you intend to make of him a mere walking dictionary—a learned fool, of no use to himself or any one else, to start with.

From this vast field every man, who would be any thing, or become any thing, must elect some very small infinitesimal part, to start with; and one of the chief uses of our schools, (after confirming them all alike, in the great *moral* American *habit* of *self-government*,) is to enable them, by giving them tastes and snatches of as wide a range of subjects as possible, connected with the real arts and interests of common and social life, more intelligently to make this proper selection for themselves.

We should not assume that they are to become teachers, or experts in any one thing whatever, that can be got out of books; for not one in a thousand of them ever will, or ever ought to, do so.

Take for example our four fundamental branches: reading, spelling, writing and arithmetic. These are the keys that unlock the gateways of knowledge to all other branches. These keys of all knowledge open the doors to all other forms of human intercourse, human thought, and human knowledge. Of course some knowledge of these is an indispensable necessity, as a first step, to every child alike. But how much? that is the question. To become an expert at either single one of these most simple and elementary of all the forms of learning, a man must devote his whole life to the task; and then probably not one in a hundred would really succeed .Amid all our schools and schoolings, a real expert at reading, writing, or arithmetic, is about the rarest of all men found. The fact is, that even in these most common and indispensable of all branches of human learning, there is no more sense in keeping our children drumming and thumbing over them in the schools, year after year, as though we expected to make them experts in one, or all of them, than there would be in trying to fit them out with a pair of wax wings, to fly to the moon with. A child should be taught to read, write and cypher, *well enough for a child; not for a man; an expert;* a writing master; a stage player; an United States Senator; or an investigator of Tammany Hall accounts; and there the whole subject should be dropped; giving him pen, ink, and paper, and interesting books to read ; and in his regular school drill he should pass on to something else, of more interest and importance for him. as a child, to learn and to know, than those higher graces of utterance, and aptitudes in investigation, which belong only to maturer years, and cannot usually be attached to a child, drill them as you will; or if seemingly so in the high-days and show-days of the school-room, the drill will all be cast aside, in the real conflict of after life; and each man who amounts to anything, as a writer, or speaker, or accountant, will have a method of his own, peculiar to him and his vocation as a man, and not that which his teacher tried so long in vain, to drill into him when he was but a boy.

Who of us all ever thinks of reading, writing, or cyphering, as our teachers tried to drill us to do, when we were boys? To be sure, we use the same alphabet, and multiplication table; and that is about all of it. With good books, eloquent speakers, interest tables, and lightning calculators, lying all about us, we soon make out methods of our own, for our own peculiar use, shorter and better, than any school-drill in childhood can possibly give us, and have no need to fill our heads, to start with, so full of dry abstract memorized rules, that there is no room for brains in them.

In all this I am fully aware of our popular monomania for spelling, or of the pedant's unpardonable sin, of not knowing how to spell; and of the common impression, that if a child is not drilled for a couple of eternities in the spelling book, he never will learn to spell. Well, suppose it is so; it may be better still not to know how to spell or write, all the totally absurd words in the English language, than it is to know nothing else. The man who can make a plow, or invent a plow, or hold a plow, is a vastly greater man, all other things being equal, tha one who can only spell it, however many silent letters he may hitc on to it. The pedantic sensitiveness about mere spelling, fostered in many of our schools and communities, is not unlike the anxiety of some of our good ladies about the orthodox cut of their minister's dickey or shirt collar. If a boy has been to school for fifteen or twen years, where they did little or nothing else but learn to spell, it migh indeed be a reproach to him to have failed; certainly he ought to hav had sense enough to have kept out of such a school. But if he learned to spell well enough *for a child*, while at school, and has since been s busy at more important things, or has a mind so constituted that h cannot retain such details, without its costing him a thousand time more labor than it is worth to him, what then? Is his misspelling mark of either ignorance, or negligence, or only because that one min can not learn to excel at all sorts of things? Some children have suc a natural facility at remembering mere words and letters, that the soon learn to spell from reading, without any difficulty at all, much our colored children learn to sing; others never would or could learn it, if drilled on it through a whole life-time; and yet it is by no means certain that the good spellers will eclipse the poor ones in real intellectual power, or in the great race of after-life.

A printer, or a proof-reader ought to know how to spell, for that is their business as experts; but I do not think a practical business man need to feel that he is foreordained to be damned to all eternity, if he should happen to spell "phthisic" without all the "ph-es" and "th-es," deemed essential to that orthodoxly-wheezing word. Some of the best and sharpest things in the English language are now written by men who purposely misspell all their words. It is a good thing for us Americans; as it shows us that sense does not consist in mere sounds or dead letters, however much our old scholastic pedants may groan over it To experts, or in a communion of educated apes, all these little mer verbal trifles may be of vast importance to social standing; but tolerably developed men ought some time to rise above them.

Reading naturally divides itself into two branches: reading fo personal information, or *silent reading*, and *loud reading* for the benefit or amusement of others, or *elocution*. The first is of vastly th most consequence to all children in our common schools. The sol thing for the child here is, that he should learn to associate ever printed word with its common conversational, natural pronunciation or sound, and its exact idea. A better way to teach him exactly how not to do it could not be devised than to set him to declaiming, in an unnatural oratund voice, high flights of oratory, or poetry, of which he cannot possibly have an adequate and proper conception, no more than he can of the man in the moon. One of the greatest curses that can befall any man, and especially any child, is to form the habit of using words which he feels he does not know the meaning of. I have never yet met a man or a woman that was so drilled and schooled, that was not, at least in the line of that forced drilling, a sheer intellectual imbecile: and very few of them are able to shake off the evil in all after life.

When I meet a man or a woman who has been catechised and drilled through all their youthful years, in words and ideas they could not comprehend, I give up in utter despair of their ever attaining half common sense, on the subject on hand, whether it be science, or religion, or policy, or morals, or what not. I would as soon undertake to reason with a mule, or a wind-mill. Our common school children of all sorts and classes ought, if possible, to be saved from such a direful life-long calamity.

Understandest thou what thou readest or sayest? should be written, in letters of everliving fire, on all the walls of every school room in the land, inside and out; and no child should be allowed to read or utter anything he did not clearly comprehend. This is the only point of thoroughness that should be exacted from a child in a school room. He should not be expected or required to thoroughly understand even the elements of any general subject, or science or art what ever; but those particular points in it, apposite to his peculiar mind as a child, and given to him for that reason, he should be made to understand thoroughly before he passes over them; and there are but few things which a child can know, or ought to know, on any subject whatever. There is a serious objection to even spelling words, the meaning of which is not clearly known; for there is no one habit derived from the school room so valuable to either man or child as the habit of invariably associating all words, and forms of words, with the things which they signify, and never even thinking of the word, without, also, thinking of the idea for which it stands. Such training would make men and women of ideas, and not of mere words. And in our great industrial classes, we do not need men who can talk by the hour, and really mean nothing, however useful they may be in other professions.

In writing, a child ought, first, to learn to write his name in the simplest and clearest form of letters possible: with no flourish of great sprawling capitals, or shadings about it. He should do this because this is the first and most needful thing for him to do, and he may not live to need anything more or better. He should approach this one most useful thing to be achieved, equally necessary to all alike, by the simplest and best analysis of all the parts of the letters of the alphabet, but with no flourish of trumpets or pens whatever, under pretence of giving him a free hand, or making him an expert at mere writing. When he can write a passable letter to his young friends, he should be let alone, and left to practice by himself, and to feel that something is really accomplished, actually done with for the present, and that he is not to be put on a life tramp over a never-ending sea of flourishes.

Then comes geography, in which children are drilled and drilled, and schooled and schooled, till they are well nigh schooled out of the world: instead of being made acquainted with what is in it. They start with a wheelbarrow full of books, in endless series and progressions; of all imaginable shapes, forms, sizes and editions; with the last improved edition in their satchel as a specimen. A school boy of 8 or 10 years really needs a dray-cart to get his books to school with, and back again; and he is drilled in this matter of geography as though it was expected that his future life-work was to be world-making, and that he was in great danger of getting some island of two acres in the South Seas, or some village in Kamschatka misplaced, or of making some river in Africa to run up hill. But most probably the poor child will never make a world in all his life: though he may get his head so full of mere memorized names and localities, that there is room for nothing else in it.

Then comes grammar, with another host of memorized rules, which every sensible man takes special pains to forget as soon as he possibly can, in order to make room, in his head, for matters of more importance.

The boy who has learned not to swear when he pounds his fingers with a hammer, and the girl who has learned not to exclaim, "Oh, dear!" or "awful," when she breaks a teacup or bespatters her dress, has already learned the most important rules in the use of the English language. For the remainder, if in some very brief book, or on the blackboard, those errors or vulgarisms, most common in each location, were simply pointed out to the pupil for practical correction, whenever he speaks or writes, without any wearisome memorizing of abstract rules whatever, it would do more and better for him, as a child, than all that Lindley Murray, and his whole succession of grammatical saints, have written from his day to ours. When a boy has decided to become an expert, or a teacher of language, or of literature, then he should commence the metaphysical study of grammar, and not before. We all learn language and use language only by habit and by imitation; and never by rule. No man, from Adam's day to ours, ever yet learned a spoken language by rule, or ever will so learn it; and those few, who ever even think of any of their rules while speaking, or writing, always advertise you of the fact. Their thoughtful, stiff, precise, school-marm mode of utterance always seems to say to you: "I am a pedant or a pedagogue. *I* have been clean through the grammars. I know a thing or two that you don't."

I always admired that truly great and good, and most learned old man, President Day, of Yale College; because, till he was nearly a hundred years old, he still talked with the people, and to the people, even in the pulpit, as they did, and said "nater" and "critter," and "can't" and "shant" and "won't," and all that, in spite of all the changing rules of the grammars and the books, avoiding every where all appearance of putting on precise, pedantic airs; and yet, start a conversation on any of those precise topics, we would find that he actually *knew* more than any forty of us put together. Who wants to send a child to school to learn to talk like a book?

Then there is *Arithmetic*. Suppose you should take a boy, and tie upon his back all imaginable sorts of tin cups, and gill-cups, and quart and gallon cups; tight lace him with all sorts of tape-lines, strings, sticks, chains, and measures; fill his pockets with all sorts of old coin and spring steelyards; put all sorts of peck measures, baskets and bushels over his head, already filled brimfull with all imaginable sorts of fractions and rules of fractions, and send him thus equipped out into life, because he may happen to want to weigh or measure something, you don't know exactly what, in after years, and you wish to have his apparatus always with him, right at hand. He needs his measures ever at hand, as much as he does his memorized rules and tables. He can do nothing without the one no more than the other; why not have both always at hand, in all after life? If a man is going to sea, or into the Army or Navy, where sudden emergencies may arrest him, with no possibility of consulting anew either tables or books of any sort, he should of course have the most essential parts of his library reprinted on his brain; for there alone it becomes practically available. And so too he must keep all his other apparatus on board, or along with him. But how, if in five minutes at any time, he can go into his pantry or his library, and find whatever of these things he needs to use for the next six months? Need he try to pack them round with him all his life-time? As a plain matter of fact, not one in a thousand ever did do it, or ever will do it. Men of action and enterprise will not burden and bother their heads with retaining such scholastic trifles. They will soon throw them all over-board, to make room for something vastly better and more important.

I know, I am fully aware, as I have said, that these studies are both elemental and fundamental, the indispensable tools of all other forms of knowledge. But how much time shall we spend on these mere elemental tools, before we begin to look out toward their application to real life as it is and must be? Shall we pause over these mere elements or tools for the whole common school period of life, before we begin to cast an eye out to the big world, as it actually is, and as God himself made it, solely for our education? or, shall we go through the thirty-nine years' course of Harvard, in still studying these mere tools and elements of all human knowledge? Where shall we stop? and why? That is the prime question; especially for all our working men on farms and in shops. If we wanted to make a practical mechanic, would we require that he should first acquire a thorough knowledge of the theoretical use of all the tools and machines of the globe, or even of any one of them, before he attempted to strike a blow—under the pretext of disciplining him for his trade, or of giving him a broad culture? Who, that really knows anything about it, does not know that such sort of discipline, is discipline to the death, for all the great ends of practical industrial life, however good it may be for mere teachers and experts; and that such broad culture, even in their case, often becomes at last, as broad as vacuity itself? It is true they get, as they say, a "rounded development": as round as a stove-pipe: and just as hollow. The whole scheme is pedantic, scholastic, artificial and unnatural. God made the actual, practical world of honest labor as it actually is, for the sole purpose of properly disciplining, developing, broadening and rounding out all the faculties of man: rounded, not like a stove pipe full, of wind, but like a cannon ball, full of solid metal, sure of its aim and resistless in its force; and the man, or the boy, that is taken out of this great common school of our Heavenly Father, the actual service and hard work of the shop or the field, for more than half his growing years, is actually robbed of the best and most important part of all possible education for any industrial art or service whatever.

It is said that those children actually put upon half-time schooling, as it is called in England and elsewhere, from the necessities of poverty and of labor in the shops and fields, in the end actually surpass the so-called more favored classes, even in their school attainments. It may be, after all, that the Lord knew a thing or two when he made men and things as they actually are, which our grammarians and school-men have not found out yet.

It has been well said, by one of our most eminent educators and common school men of the West, "We take the child out of God's natural industrial university, and away from his proper education, to send him to school," where, at best, only a fraction of his entire manhood can be properly developed. And, after all, we do not fit pupils for actual life, even in these elemental studies, after forty weeks schooling per annum, as well as they used to be fitted in ten weeks, half a century ago.

How has all this happened? It is not the fault of the teacher: or the system as such: nor the scholar. The Republic never before had as good a set of teachers, or as good an outline of a system, or a smarter, brighter race of children than it has got now.

One prime cause of this result is, that the bookmakers and publishers have in fact assumed about as absolute control of our schools, as the "politicians" have of our post offices: neither teachers nor parents nor committees have any real control over their absolute practical direction. I am credibly informed that rich publishing houses have offered as high as seventy thousand dollars for the introduction of a single book, into one single State. Books are, of course, generally, made by experts. Every expert desires duly to magnify his office and his department: a mathematician naturally thinks that God and nature are nothing but an unsolved problem in mathematics: a chemist thinks they are all in the bottom of his crucible: a linguist or an elocutionist thinks they are all *vox et preterea nihil:* while a spelling-book maker thinks they are all spelling, and, in English, at least, all spelled wrong. Each one wants to make a book on his department: he wants every child to be *thorough*, at least in that. He soon finds that it will take a series of books to go over even the elements needful to an expert, and that if you were to begin with a child as soon as he is born, and drill him till he is older than the archangels, he could not become perfect, even in that single department. But he intends to make a thorough beginning: so he crams into his new series of books all the little unimaginable rules and trifles that the human race in twenty centuries have ever thought, upon the subject. The first dose is homœopathic: one grain of science diluted by a world full of wind, for very young children: each dose becomes a little more allopathic and stiff and formal, than the preceding: but the trouble is, you never get through with it: you are never done with it: never ready to throw it aside and pass on to something else: it is "all motion and no go." A new term brings you flat back against a new series on the same subject: you don't get one dose fairly down before another is ready. All the doses are composed mainly of the three R's, "reading," "'riting," and "'rithmertic." You never seem to get out of that charmed circle.

The bookmaker likes all this: the more series there are, the more binding and printing and sales and profits in all respects: especially as it is morally certain that no two children or pupils of any sort, will continue to use the same books in succession: and a totally new series, full of most wonderful improvements, even on the dead classics, is sure to be born at least once a year, and to outrival everything that preceded it.

A man with much of a family needs to build an out-house for the storing of his old cast-off schools books. He cannot manage, economically, to burn them up for kindling wood, as fast as the bookmakers want him to buy them. But the main trouble is, they are all made by experts: and they usually, either like commentaries on the Bible, explain everything except the precise point that needs explanation, or adjust their explanations to the wants of a preconceived expert, rather than to those of a common child. What would we say of a child's book on human teeth or eyes, which attempted to embody in it all the little rules, and minute facts essential to the expert oculist, or dentist? What of a child's book on the plow, with all the miners', and forgers', and wood-workers', and painters', and holders', and teamsters', and farmers' rules for making, and handling, and using it, embodied in an everlasting series of most thorough and important rules, to be committed to memory by the tyro learner about the plow, in order to make him thorough in his knowledge of it, well-disciplined, and well-rounded out? Or what should we say if it was a rule of the school, that every child alike, who took up singing, should advance precisely so far in it before he was allowed to take up anything else, wholly irrespective of his natural taste and aptitude for music. I might, myself, have sung till the stars fall, and done nothing else, and still never have made a singer: precisely so, some children never would make good spellers, or elocutionists, or grammarians, or arithmeticians, if they were drilled on them to all eternity: while they might all easily excel in some one of these things, or in other things outside of them. The teacher has little chance to get hold of this matter: like the postmaster, he must use the materials actually furnished him, simply because he can get no others: or if he could, it is doubtful if the community would tolerate him in the change.

I have thus intimated the need of shortening our present protracted school-drill on the elements, because as they are now taught there is absolutely no room for anything else.

I wish to make room for the beginning of some of those sciences that underlie our industrial arts. The time was when nothing but these most elementary branches could be taught in our schools; "the times of this ignorance God winked at; but now he commandeth all *schoolmasters*, everywhere, to repent."

A whole fraternity of these practical sciences have been awaiting *our notice*, ever since "the morning stars sang together and all the sons of God shouted for joy." But we have had our eyes so intently fixed on dead grammars, and dead nomenclatures, that we have not been able to see them.

I would have even these introduced into our common schools, with no sort of expectation or intent of ever making scholars or experts of a single one of the children. I would teach them only what it is needful for every child to know, and not at all what it is needful for an expert or even a teacher to know; any teacher who undertakes to teach a *pupil*, one-tenth part of what he knows himself on any subject, is really not fit to teach him at all.

I can best illustrate my meaning by taking some one single example. The State of Illinois pays out annually from eight to twelve millions for her schools; nobody begrudges it; it is *even now*, money well spent; but not as well as it might be.

Our best experts inform us that the same State annually loses from ten to twenty millions of money, from noxious insects: or more than all her schools cost; some years, several times more. Our learned State Entomologist, Dr. LeBaron, stated in a lecture to our farmers last winter, at which I was present, that there are but about one hundred insects, (one hundred and four, I think,) all told, which do this immense amount of mischief. Some few of these insects are well known to all. But I doubt whether there is another single man in the State, except the Doctor, who knows them all by sight; or anything at all of their nature and habits; and the remedies for most of them. About half of these prey upon the products of the farms, and the other half upon those of the garden and orchard. Men are perpetually writing from all parts of the State, to Dr. LeBaron, or sending him these insects, of one sort or another, to inquire what they are, and what they can do with them.

How now would I introduce the study of entomology into the common schools of Illinois? I would go out into the fields and catch these one hundred insect culprits, "every mother's son of them," no more and no less, and stick pins through their backs, and put them up in a show-case, in every common school in the State, arranging them, for convenience, in their regular classes and orders; and I would make every child in the State thoroughly understand all that he needs to know about them, and to know every one of them by sight as well as he knows his father's cows or horses: instead of having one or two lone men in a great State, some hundreds of miles square, to look after their habits and their remedies, in the next generation I would turn all the million of eyes in the State distinctly and intelligently upon them; and under these natural and necessary conditions, we might hope soon to devise means for either their amelioration or their cure. I would not care particularly whether the pupils knew that there were any other insects in the world or not, but only these and their natural parasites, or cannibals; or whether they knew that there was any such science or word as entomology in the English language. But these fellows, the source of all our insect woes, they should know and know well; though of course a good teacher would naturally, and incidentally, give them an outline of the whole science, and awaken an interest perhaps, in some minds, to pursue it for life, without their knowing when or how he had done it. The sum total of all this most needful practical knowledge given to every child, would not abstract a single month's time from any other study whatever. And yet I myself spent thirty solid years in the schools, without acquiring this knowledge, and I have not got it to-day, though not a single year of my life has passed that I have not suffered for the want of it.

Suppose I had attained it, even at the hazzard of spelling "Phthisic" without wheezing, or of not knowing the boundaries of Kamschatka; or of finding some word in English literature I could not parse according to Lindley Murray; or of not being able to sand my sugar, water my molasses, or whisky, and corn-meal my mustard and ginger, according to the rules of "allegation" to all eternity.

Such substantially would be my mode of introducing entomology, and all other sciences and subjects to children, through the whole range of natural history and of human art. I would teach them first only what they, as children, not as present or future scholars or experts, most needed to know and to learn. I would thus impart to them the fixed habit, in childhood, of observing and reflecting upon all the beautiful and peculiar things which God and man has made; instead of confining them to one everlasting drill in the three "r's," until many of them become wearied and disgusted with the whole idea of a school room.

I am well aware that there is another way of introducing a pupil to entomology and all kindred sciences, far more thorough, according to our scholastic notions of thoroughness, and perhaps better for a youth who has determined to become a teacher, or professor, or an expert, for life, in that line. It is the scholastic mode. I have in my library a work on entomology written by one of our most able experts. The author wrote it, as he says, as a mere introduction to teach the beginner the mere elements of the science of entomology; that is, to fairly introduce him to his tools, or his indispensable technical and scientific terms. The book contains over 700 large, closely printed octavo pages. At the first dash the pupil is truly informed, that there are about two hundred thousand known and classed species of insects, all with good long, barbarous, Latin and Greek names, wholly unknown to any English reader; two hundred thousand entirely new, and unknown names, of species, to say nothing of their innumerable varieties, to be learned the first dash, as a mere introduction, a sort of bird's eye view, of the needed tools on hand. Most men would learn to read the whole Bible in any civilized language now spoken on the globe, sooner and easier than they could acquire such a ready and prompt use of the bare terminology of this science, as is required by an expert. That we have no time in our common schools for the study of entomology, or any other science, in any such thorough and scientific sense as this, every child must see; indeed there is not time enough on earth for it; it needs a whole eternity. But may not our children know some few things about it; our men a few more, and our experts more still?

Could not our common schools teach us something about this, as well as all other practical sciences, that we as farmers need to know, as well as to teach us a thousand things which we never need to know, and are of no practical use when they are known.

But here comes up "discipline," "discipline," "mental discipline." Well, what of it? What man of common sense does not know that under pretense of "necessity" in the State, "orthodoxy" in the church, and "discipline" in the schools, nearly all the conservative tyrannies and infamies, and stupidities, and crimes, and outrages, and blunders of civilized man have been perpetrated, and preserved for well nigh two thousand years in the world? I wish our conservative friends to fully understand, that on this American soil of ours, they have got something else to do, to preserve their hereditary fixtures, beside to shout "necessity," or "orthodoxy," or "discipline," in our ears, without telling us distinctly what they mean by either of them.

Nine-tenths of all the studies now pursued in all our schools, alike are more strictly and wholly professional, or of use to a very narrow professional class of teachers and experts, and to nobody else, than an outline of these natural and industrial sciences would be. This has happened as a matter of course. Professional men and experts have made all our books, instituted all our courses, methods and curriculums, and educated all our teachers. If they have not taken care of themselves and their own limited and narrow scholastic professions, they surely must be great fools; for, to within a very few years, they have done absolutely nothing else; surely nothing for us, except what was barely incidental and unavoidable.

But they have not done shouting, discipline, yet; though not a single man among them can clearly inform us what they mean by it, only that we should leave things much as they are, and run all our schools, in practical effect, to make scholars and experts for a very narrow scholastic class, instead of directing their main force to the wants and interests of a very wide industrial class, who pay nine-tenths of all the money expended on them, and furnish nine-tenths of all the pupils that attend them.

How the good Lord of us all came to make the stupendous blunder of leaving all needful and proper mental discipline out of the inevitable pursuits of ninety-nine-hundredths of the human race, and to tie it all up in the books, and theories, and libraries, and pursuits, and interests of the remaining one-hundredth part, they do not clearly explain to us. All our courses of study to-day quietly assume, from the start, that the child is about to be in after life, what not one in a thousand of them ever will be, or ever ought to be, instead of assuming that they all will be, what they inevitably must be. Why we should find all proper mental discipline in the memorized rules, and abstract scholastic trifles, of the one narrow class, and none at all in the world-wide practical facts, interests and sciences of the other class, has never yet been duly explained.

What more true and proper mental discipline is there, in a child's racking his muddled, and puzzled, enfeebled and much-abused youthful brain, in trying to guess out many of the mere arithmetic riddles and conundrums, found in nearly all our school arithmetics, than there would be in his trying to guess at the size of the man's foot in the moon? What more proper mental discipline is there in a boy's spending three-fourths of his whole time, day after day, in tumbling over the leaves of a huge Greek folio dictionary, in search of some word or variation of a word, which he can have no more idea where to look for than if he was looking for a needle in a hay mow? He merely *guesses* that it is from one root, and tumbles to look; then guesses at another, and tumbles again and again, till at last he chances to find it, or gives up in despair, and perhaps in a mortification that injures him for life. To pick up chips in the wood-yard is an infinitely better discipline for any boy, than such sort of study as this, if he could never reach any better sort. True, if he at last finds his enigmatical word, he will remember it for life; and so he would if you had laid him down and bastinadoed him, under pretence of giving him mental discipline. And bastinadoing bodies is less dangerous than bastinadoing brains, even if it is for the time more painful. True, boys so disciplined will, for most part, live through it. Many of them will become *hugely* learned; most viciously rhetorical and able; but for most part shockingly conservative of all the old rules in which they have been trained; and still more shockingly imbecile, in the great wide world of thought and action that lies outside of them. In these remarks I am not inveighing against the study of the Greek or of any other language, but only against the barbarian mode in which it is still taught in many of our schools.

In Europe, where the time of a full-grown man is worth but a few pence per day, and where they wish to train up literary experts of all sorts, for the rest of the world: classical experts, to prove that Homer never lived: theological experts, to prove that Christ never was born; or if so, that all he taught was either a plagiarism or a blunder: metaphysical experts, to prove that all existence is an illusion, all morality a prejudice, and all freedom and responsibility an absurdity: republican experts, to uphold all old tyrannies, or foment all new anarchies and discords. I say all this may be well enough for them: but our plain, hard working American people, have no time for such fullness, and breadth, and roundness of culture, such finished mental discipline, as all this implies. We want to know something about our own continent, our own life work, our own bodies and bones and souls: our own duties and destinies in the great republic in which we live. Compared with this what old dead nations and generations may have thought, or said, or done, is of very little moment to us. In any true view, we shall find little in them to admire, and nothing at all to servilely imitate. Even new heathen Japan furnishes us to-day, apparently, a better Christian example as a nation, than all the old dynasties of Europe put together, have done in three thousand years. So that even if we were born of monkeys, we need not continue to be monkeys. I look only to our agricultural and industrial classes, to lift us out of this monkeydom of precedent, into the true freedom of American citizenship. They must make our common schools their first and chief instrument: for they alone are able to do it. Fortunately for us, we need no new system: no new laws even: no sudden revolutions or changes of any sort. All that is needful is that each man of us should set about quietly and earnestly improving his own school, in his own district, as fast and as fully as he can.

P. S.—Since writing the above, and since I came into this city, I learn from Prof. Harris, Superintendent of the St. Louis city schools, that he has actually introduced the natural sciences into these schools, giving them a lesson of one hour per week, and he informed me that, instead of detracting from their force in other studies, in his opinion it had increased it full fifty per cent. This is even more, and better, than I expected from a first trial.

GENERAL AGRICULTURAL LAWS.

The following laws bearing particularly upon Agricultural organizations, and the farming community, were passed by the Twenty-Seventh General Assembly:

DEPARTMENT OF AGRICULTURE.

AN ACT to create a Department of Agriculture in the State of Illinois.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That there be and is hereby created and established a department in the state of Illinois, to be known and styled "The Department of Agriculture," the objects of which shall be the promotion of agriculture and horticulture, manufactures and domestic arts. The business of said department shall be conducted by a board, to be styled "The State Board of Agriculture," which shall consist of a president, as many vice-presidents as there are or from time to time may be congressional districts in this state, and the last ex-president of the State Board of Agriculture. Said presidents and vice-presidents shall hold their respective positions for two years, and until their successors are elected and qualified. The first board of agriculture under this act shall consist of the present president, vice-presidents, and the last ex-president of the (present) Illinois State Agricultural Society, who shall hold their positions, respectively, until the second Monday of January, one thousand eight hundred and seventy-three. Said State Board of Agriculture shall have a secretary and treasurer, who shall not be members of the board, and who shall hold their positions for the same time as the members of the board. The treasurer shall give bond, as may be required by said board. The secretary and treasurer of the Illinois State Agricultural Society, at present, shall, respectively, be the secretary and treasurer of the State Board of Agriculture, and hold their positions the same time as members of the board: *Provided*, that said secretary of the State Agricultural Society, by virtue of his position, shall, until the second

Monday of January, one thousand eight hundred and seventy-three, be a member of said board.

§ 2. The State Board of Agriculture shall have the sole control of the affairs of the department of agriculture, of all state fairs; and may make such by-laws, rules and regulations, in relation to the department of agriculture and the management of the business of such department and state fairs, and offering premiums, as a majority of said board shall, from time to time, determine, not inconsistent with the constitution and laws of this state or the United States. But this state shall, in no event, be liable for any premium offered or debt contracted by said board of agriculture.

§ 3. The State Board of Agriculture shall provide for the organization of county agricultural boards, to comprise, in counties having but one agricultural organization, on the assent to the provisions of this act, of the directors or other managers of any legally organized agricultural society holding an annual fair, at which premiums to the amount of five hundred dollars are awarded; and in counties having more than one agricultural organization, such county board shall consist of the various agricultural organizations, each represented therein, under such regulations as they may themselves, or if they fail in agreeing, the State Board of Agriculture, shall prescribe; and said county board shall report its proceedings to said State Board of Agriculture, annually, and shall be styled "The ——— County Agricultural Board."

§ 4. Whatever moneys shall, from time to time, be appropriated to the department of agriculture, shall be paid to said State Board of Agriculture, and may be expended by them as in the opinion of said board will best advance the interests of agriculture and horticulture, manufactures and domestic arts, in this state: *Provided*, that when appropriations are made for the use of said State Board of Agriculture, that such appropriation shall provide for at least one hundred dollars, annually, for the use of each county agricultural board, to be paid by said State Board of Agriculture to each county board of agriculture which shall have given satisfactory evidence to said state board of having held an annual fair, and made their annual report to said State Board of Agriculture.

§ 5. The State Board of Agriculture shall keep an office for the transaction of its business, at Springfield; and when the new state house is so far completed as to allow thereof, there shall be assigned to the department of agriculture suitable rooms therein, to be under the control of said board.

§ 6. The State Board of Agriculture in that name, and the several county agricultural boards in their respective names, may contract and be contracted with, may purchase, hold or sell property, and may sue and be sued in all courts or places; but this state shall never be liable for any debt or contract of any of said boards.

§ 7. The State Board of Agriculture shall be elected every two years, on the first Wednesday of the annual state fair, on the fair grounds, by delegates chosen by the several county agricultural boards, each county board having three votes and no more. The president, secretary and treasurer of the state board may reside any where in the state. The vice-presidents shall reside in the district which they respectively represent. The first election of the State Board of Agriculture shall be held in the fall of one thousand eight hundred and seventy-two.

§ 8. The State Board of Agriculture shall make an annual report to the governor of the transactions of the department of agriculture, which said report shall include a complete classified statement of all moneys received, and of all expenditures and expenses; and the governor shall cause ten thousand copies of said report to be printed, one-half for the use of the department of agriculture, and the remainder for the use of the state and general assembly.

§ 9. The State Board of Agriculture may, for cause, to be spread upon their journals, remove the secretary, or treasurer, or expel a member, and may fill any vacancy arising from any cause.

Approved April 15, 1871.

IMPROVING BREED OF ANIMALS.

AN ACT to amend "A general act of incorporation of agricultural and horticultural societies and associations for improving the breeds of domestic animals," approved Feb. 15, 1855.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That sections three and nine of "A general act of incorporation of agricultural and horticultural societies and associations for improving the breeds of domestic animals," approved February fifteenth, eighteen hundred and fifty-five, be and the same are hereby amended so as to read as follows:

"*Section* 3. The secretary *pro tempore* of said meeting shall keep a correct minute of the proceedings of said meeting, which being certified by said secretary and the president *pro tempore* of said meeting, shall, within five days after said meeting, be filed for record in the recorder's office of the county within which said meeting is by this act authorized to be held; and it is hereby made the duty of the recorder to record said minutes and certificate in some book kept for recording deeds. A copy of the constitution of said society or association shall also be filed in said office, where the same shall be preserved for the inspection of the public. Whenever such constitution shall be altered or amended by such society or association, a copy of the altered or amended constitution shall also be filed in said office, to be there preserved in like manner. The recording officer, for recording and also for filing the documents by this act required to be respectively filed and recorded, shall be allowed the same fee as is now allowed by law for similar services; which fee shall be paid by the society or association. On filing in said office a certified copy of the proceedings of said meeting, and also a copy of the constitution of said society or association, in pursuance of this act (the previous steps herein required having been properly taken), the persons whose names are then subscribed to the constitution of said society or association, together with all others who after that time may become members of the same, shall become a body coporate and politic, by the name assumed and set forth in their said constitution, with perpetual succession; and by that name may have and use a common seal, may sue and be sued, answer and be answered in all the courts of this state, whether of law or equity; may sue for and collect all voluntary subscriptions or donations; and by that name may acquire and hold real estate, not exceeding in quantity five hundred acres; and may construct and erect all necessary improvements and buildings thereon for agricultural and horticultural experiments, and for rearing domestic animals, and for improving the breeds of the same, and for taming, improving and breeding of such animals as are commonly found wild; and for such purposes said society or association may have and employ capital, apparatus, implements, machinery and live stock, altogether not exceeding in value fifty thousand dollars."

"*Section* 9. Until the whole capital stock of the society or association, including money, implements, apparatus, machinery, live stock and property of every description, whether real, personal or mixed, shall amount to one thousand dollars, the profits, if any there be, arising from the operating or experiments of the society or association shall not be divided among the stockholders, but shall accumulate as capital stock until the said capital shall reach the sum of one thousand dollars; but after said capital stock shall have reached the sum of one thousand dollars in value, then a dividend of profits may from time to time be made among the stockholders, in proportion to the number of shares held by each: *Provided*, this section shall not be construed to restrain the society or association from offering or giving premiums to any amount which the society or association may think proper."

§ 2. Whereas an emergency exists, viz: that many associations, formed under the law of which this is an amendment, desire to make improvements immediately, involving an expenditure of more than ten thousand dollars; therefore this act shall take effect and be in force from and after its passage.

APPROVED February 29, 1872.

DISPOSE OF LANDS.

AN ACT authorizing agricultural societies to sell, exchange, dispose of and convey lands.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That whenever any agricultural society shall have acquired any lands, and the same shall become ineligible for the use for which such lands were acquired, such society, in its corporate capacity, may sell, exchange, dispose of and convey said lands; and the deed of any such corporation, executed and acknowledged by its presiding officer, shall be effectual in law for that purpose.

§ 2. Whereas it is necessary that certain agricultural societies should dispose of or exchange grounds, in order to hold fairs in eighteen hundred and seventy-two; therefore this act shall take effect and be in force from and after its passage.

APPROVED March 8, 1872.

APPROPRIATIONS TO AGRICULTURAL BOARDS.

N ACT to appropriate moneys in aid of the State Board of Agriculture and of the county agricultural boards.

SECTION 1. *Be it enacted by the People of the State of Illinois, presented in the General Assembly*, That there be and is hereby ppropriated to the State Board of Agriculture the sums following, to-wit: For the payment of premiums at the annual state fair, the sum of three thousand dollars ($3,000) per annum, for two years; for the use of county agricultural boards, the sum of one hundred dollars ($100) each per annum, for two years.

§ 2. On the order of the president, countersigned by the secretary of the State Board of Agriculture and approved by the governor, the state auditor shall draw his warrant upon the state treasurer in favor of the treasurer of the State Board of Agriculture, for the sums herein appropriated: *Provided*, that each warrant shall show the agricultural board for whose benefit the same is drawn, and that no warrant shall be drawn in favor of any county agricultural board, unless the order aforesaid be accompanied by a certificate of the secretary of the State Board of Agriculture, showing that in such county there has been held, in the year preceding, a fair for the encouragement of general agriculture, at which premiums to the amount of not less than five hundred dollars ($500) were paid: *And*, *provided*, *further*, that it shall be the duty of said treasurer of the State Board of Agriculture to pay over to the proper officer of each county board of agriculture the sum received for its benefit, as aforesaid, and to make a biennial report to the governor of all such appropriations received and disbursed by him.

Approved January 5, 1872.

TO PROHIBIT DOMESTIC ANIMALS RUNNING AT LARGE.

AN ACT to prohibit domestic animals from running at large in this State.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That it shall be unlawful for the owner or owners of any domestic animals of the species of horse, mule, ass, cattle, sheep, goat or hog, to suffer the same to run at large in an county in this state, after the first day of October, eighteen hundred and seventy-two, except as hereinafter provided.

§ 2. Any owner or owners violating section one of this act shall, conviction before any justice of the peace having jurisdiction, pay fine not less than three dollars nor more than ten dollars, for each every offense, to the common school fund of the township.

§ 3. The county clerk of any county wherever it may be unlawf for domestic animals to run at large by virtue of this or any speci law, on petition of one hundred or more voters therein, shall give n tice with the election notices of the then next succeeding general election in such county, that at such election the voters of such county may vote for or against domestic animals running at large in such county, or any species thereof, to be mentioned in such notices, and separate ballot boxes shall be used at said election. Such votes shall be received and canvassed by the proper judges of election, and returns made in the same manner as the other election returns; and if a majority of the votes cast on such question is for domestic animals, or any species thereof, running at large, it shall be lawful in such county for such domestic animals, or species thereof, to run at large.

§ 4. At any succeeding general election, on like petition and notice, the voters of such counties electing to allow domestic animals to run at large, may vote to rescind such former election, and to come under the provisions of this law where no such vote is taken.

Approved January 13, 1872.

PREVENT MALE ANIMALS RUNNING AT LARGE.

AN ACT to prevent male animals running at large, and for their restraint.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That it shall be unlawful for any male animal, viz: stallion, jackass, bull, ram or boar, to run at large in this state.

§ 2. That whenever any animal, as set forth in the first section of this act, shall be allowed, by its owner or owners, keeper or keepers, to run at large or go unrestrained, it shall be lawful for any person to restrain the same by proper confinement and care; and the person so restraining shall immediately advertise such animal by posting up in three of the most public places in the township where the person so restraining shall reside, and the owner or owners, keeper or keepers of such animal, shall be required to pay to the person so restraining, five dollars for such restraint, seventy-five cents each for the three advertisements so posted up, and seventy-five cents per diem for their maintenance while in his care; upon the payment of which, and the proper proof of ownership or agency for such ownership, the person so restraining shall deliver up such animal, unless as provided in the third section of this act.

§ 3. Any owners or keepers of animals, as set forth in the first section of this act, who shall allow such animal to run at large, or go unrestrained, in addition to the foregoing, as set forth in the second section of this act, upon complaint of any person or persons to any justice of the peace, or town officer having jurisdiction, such owner or owners, keeper or keepers, shall be deemed guilty of trespass, and shall be mulcted in a fine of not less than five dollars, nor more than fifty dollars for each and every such offense. And in addition to the foregoing, every such owner or owners, keeper or keepers of such male animals, as set forth in the first section of this act, who shall allow such male animals to go unrestrained, or run at large, shall be deemed liable for all damages that may accrue to others, whether to their persons or their property, as stock-breeders or otherwise, caused or brought about by the unrestraint or running at large of said male animals; and damage so accrued shall be recoverable by law in an action for damages in any court having jurisdiction of the same.

§ 4. If such male animal shall remain in the possession of the person restraining it for thirty days from the time of advertising it, it shall be deemed an estray, and the laws of this state governing estrays shall be applicable to it.

Approved March 8, 1872.

PREVENTION OF CRUELTY TO ANIMALS.

AN ACT to amend an act entitled "An act for the prevention of cruelty to animals," approved March 31, 1869.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That section one of an act entitled "An act for the prevention of cruelty to animals," approved March thirty-first, eighteen hundred and sixty-nine, be amended so as to read as follows, viz: "That whoever shall willfully overdrive, overload, overwork, torture, torment, deprive of necessary sustenance, cruelly beat, mutilate or kill, or cause or procure to be so overdriven, overloaded, overworked, tortured, tormented, deprived of necessary sustenance, cruelly beaten, mutilated or cruelly killed, any horse, ox or other animal, (the word animal, as used in this act, and the act to which this is an amendment, shall be taken to mean any living creature,) and whoever, having the charge or custody of any such animal, either as owner or otherwise, shall unnecessarily fail to provide such animal with proper food and drink, shall, for each and every offense, be punished by a fine not less than five dollars and not exceeding one hundred dollars, to be recovered on complaint before any justice of the peace, or by indictment in the county where such offense shall be committed.

APPROVED March 8, 1872.

TO ENFORCE ACT IN REGARD TO CRUELTY TO ANIMALS.

AN ACT to authorize the county boards, or other bodies having control and management of the county affairs of the several counties of this State, to take measures to enforce all laws in regard to the prevention of cruelty to animals.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That the county boards, or other bodies having control and management of the county affairs of the several counties of this state, are hereby authorized and empowered to take all such necessary measures, and to institute such proceedings, as they may deem proper, to enforce all the laws of this state for the prevention of cruelty to animals.

APPROVED March 1, 1872.

CANADA THISTLES.

AN ACT concerning Canada thistles.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That there may be appointed by the board of town auditors in counties under township organization, and by the county commissioners in counties not under township organization, for each township or election precinct, and by the city council of any city, or by the president and trustees of any town or village, as the case may be, some competent person, to be styled "Commissioner of Canada Thistles," who shall take the oath required of township or precinct officers, and shall hold his office for the term of three years, and until his successor is appointed and qualified; and he shall receive for his compensation the sum of two dollars a day, for each full day cessarily spent in the performance of his duty, to be verified by affidavit. The board of appointment may, at any time, for good cause, remove the commissioner from office, and appoint his successor, to serve the remaining portion of his time.

§ 2. The Commissioner of Canada Thistles shall diligently inquire concerning the introduction and existence of Canada thistles in his township or precinct, and if any are found growing therein he shall take charge of all such growing in the highway and on uninclosed lands, and take care that they do not go to seed, or otherwise spread; and he shall carefully seek and learn, so far as practicable, the best methods for their destruction, and he shall persistently apply, in proper time, such remedy or treatment as he shall deem best calculated to prevent their spread and to eradicate the same.

§ 3. In case said thistles are found growing on inclosed lands, the commissioner shall advise with the owner, agent or occupant on their treatment, and if the said commissioner shall deem it necessary and expedient for him to fully control the same, he shall agree with the owner, agent or occupant on the boundaries of the tract so infected, which it is expedient for him to control, and he shall mark the same by stakes, or by fence, if thought best; and thereafter such infected tract, or so much as from time to time remains infected, shall be managed and controlled by the said commissioner, for the purpose of destroying the said thistles, and so long as it may be necessary to complete the work. In case the commissioner and the owner, agent or occupant of the land cannot agree, as regards the propriety of the commissioner controlling such tract, or of the boundaries of the same, then the commissioner shall proceed to stake out or mark such boundaries as he deems proper, and file a copy of his decision with the town clerk, or, in counties not under township organization, with the county clerk. The owner, agent or occupant of the land may, if he feels aggrieved, appeal from such decision of the commissioner, without bonds, within twenty days, to the commissioners of highways of the town, or to the county commissioners, as the case may be, who shall proceed to view the same, and to hear the reasons for and against the decision of the commisioners; and a majority of such board of appeal shall decide as to the propriety of taking possession of the tract alleged to be infected, and if they decide to take such possession, what shall constitute the boundaries of the same, and shall direct said commissioner to exterminate said thistles (which are hereby declared a public nuisance), without unnecessarily depriving the owner of the land of any legitimate use and enjoyment of the same.

§ 4. The commissioner shall apply the best known means, and use the utmost diligence in eradicating the thistles; but he shall not have power to expend in work or materials more than one hundred dollars on any one infected tract, without the advice and consent, in writing, of the supervisor of the town, or of the county commissioners, as the case may be.

§ 5. It shall be the duty of the commissioner to prosecute or complain to the proper authorities of any person or corporation who may violate any law now existing, or which may hereafter be passed, on the subject of Canada thistles.

§ 6. The commissioner shall, annually, before the first day of November, make a written report to the supervisor of the town, or to the county commissioners, as the case may be—which report shall be filed with the town clerk, or, in counties not under township organization, with the county clerk. The report made to the supervisor shall be publicly read at the annual town meeting. Said report shall state—

First—Whether there are or not any Canada thistles growing in the town or precinct.

Second—If any are growing, where and how many, and when and how introduced.

Third—A detailed statement of his treatment of each infected tract, with cost and result.

Fourth—He shall report such other matters as may be required of him by the board of town auditors, or by the county commissioners.

Fifth—He shall state his views on their further treatment, and make such suggestions and recommendations as he may deem proper and useful.

And he shall also forward a copy of said report to the secretary of the State Board of Agriculture, who shall collate and report the same to the governor by the first day of December of each year.

§ 7. The board of town auditors, and the county commissioners in counties not under township organization, shall audit the accounts of the commissioner, both for his services and for the money expended or labor employed by him; and they shall provide for their payment as they now do for other town or county expenses.

§ 8. The boards of supervisors and county commissioners may make appropriations from the county treasury to aid in destroying the Canada thistle in any one or more towns or precincts of the county; and in case they deem it expedient, they may assume control over any one tract or of all the Canada thistles in the county, and make such provision as they may deem necessary, and impose penalties, not exceeding one hundred dollars for each offense, for a violation of any provisions, by-laws or regulations made by them on this subject, to be sued for by the commissioner, in the name and for the use of the proper county, before any justice of the peace having jurisdiction. Whenever the board of supervisors or county commissioners shall decide to assume control, and so long as they exercise it, their jurisdiction shall be superior to that of the commissioner.

§ 9. Whereas Canada thistles are now growing in various parts of the state, requiring attention before the first day of July: therefore this act shall take effect and be in force from and after its passage.

Approved March 15, 1872.

HUNTING.

AN ACT to prohibit persons from hunting within the inclosures of others, without leave.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That it shall be unlawful for any person or persons to hunt with gun, dog or net, within the inclosed grounds or lands of another, without first obtaining from the owner, agent or occupant of such inclosed grounds or lands, his, her or their permission so to do.

§ 2. Any person or persons violating section one of this act shall be deemed guilty of a misdemeanor, and may be prosecuted in the name of the people, before any justice of the peace, or by indictment or information in any court in the county where said misdemeanor was committed; and in all such prosecutions the owner or owners, or persons in possession of said inclosures, shall not be required to prove title to the inclosures in controversy.

§ 3. Any person convicted of violating section one of this act shall be fined in a sum not less than three dollars, and not exceeding one hundred dollars. All fines collected by virtue of this act shall be paid into the common school fund of the township in which the offense is committed.

Approved April 15, 1871.

MARKS AND BRANDS.

AN ACT in regard to marks and brands.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That every person in this state, who hath cattle, horses, hogs, sheep or goats, may have an ear mark and brand, and but one of each, which shall be different from the ear mark and brand of his neighbors; which ear mark and brand may be recorded by the county clerk of the county where such cattle, horses, hogs, sheep or goats shall be.

§ 2. It shall be the duty of the county clerks, in the respective counties of this state, to keep a well-bound book, in which they shall record the marks and brands of each individual who may apply to them for that purpose; for which they shall be entitled to demand and receive the sum of fifteen cents; and the book in which the same are recorded shall be open to the examination of every citizen of the county, at all reasonable office hours, free of charge.

§ 3. If any dispute shall arise about any ear mark or brand, it shall be decided by reference to the book of marks and brands kept by the county clerk, but such book shall be *prima facie* evidence only.

§ 4. Any person purchasing or acquiring horses, cattle, hogs, sheep or goats, when he brands or marks the same in his brand or mark, after the acquisition of the same, may do it in the presence of one or more of his neighbors, who are authorized to certify to the fact of the marking or branding being done, when done, and in what brand or mark the same were, previously, and in what brand or mark they were re-branded or re-marked. Such certificate shall not be deemed evidence of property in the animal branded, but only *prima facie* evidence of the facts therein certified to.

§ 5. That chapter sixty-eight (68) of the Revised Statutes of 1845, entitled "Marks and Brands," and all other acts in conflict with this act, are hereby repealed.

APPROVED March 29, 1872.

ROADS AND BRIDGES.

AN ACT in regard to roads and bridges.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That all roads within this state, which have been laid out in pursuance of any law of this state or of the late territory of Illinois, and which have not been vacated in pursuance of law, or used for ten years, and roads dedicated to public use, and recognized by the corporate authorities of any town or county, are hereby declared to be public highways.

§ 2. Whenever any persons traveling with any carriages shall meet on any turnpike road or public highway in this state, the persons so meeting shall seasonably turn their carriages to the right of the center of the road, so as to permit each carriage to pass without interfering or interrupting, under the penalty of five dollars for every neglect or offense, to be recovered by the party injured: *Provided*, this section shall not be construed to apply to any case where it is impracticable, from the nature of the ground, to turn to the right of the beaten track.

§ 3. No person owning any carriage, running or traveling upon any road in this state, for the conveyance of passengers, shall employ or continue in employment any person to drive such carriage who is addicted to drunkenness or the excessive use of malt, vinous or spirituous liquors.

§ 4. If any driver, while actually employed in driving any such carriage, shall be guilty of intoxication to such a degree as to endanger the safety of the passengers in the carriages, it shall be the duty of the owner of such carriage, on receiving written notice of the fact, signed by any one of said passengers and certified by him on oath, forthwith to discharge such driver from his employment; and every such owner who shall retain or have in his employ, within three months after the receipt of such notice, any driver who shall have been so intoxicated, shall forfeit at the rate of five dollars per day for the time during which he shall keep such driver in his employment, after receiving such notice.

§ 5. No person driving any carriage upon any turnpike road or public highway in this state, with or without passengers therein, shall run his horses or carriage, or permit the same to run upon any occasion, or for any purpose whatever; and every person who shall offend against the provisions of this section shall be fined not exceeding one hundred dollars.

§ 6. It shall not be lawful for the driver of any carriage, used for the purpose of conveying passengers for hire, to leave the team attached thereto, while passengers remain therein, without first making *such* team fast with sufficient halter, rope, or chain, or by placing the lines in the hands of some other person so as to prevent their running; and if any such driver shall offend against the provisions of this section, he shall forfeit the sum of twenty dollars, to be recovered before a justice of the peace.

§ 7. The owner of every carriage, running upon any turnpike road or public highway, for the conveyance of passengers, shall be liable, jointly and severally, to the party injured, in all cases, for all injuries and damages done by any person in the employment of such owners as a driver, while driving such carriage, to any person or to the property of any person; and whenever the act occasioning such injury or *damage* be willful, negligent or otherwise, in the same manner as such driver would be liable.

§ 8. The term "carriage," as used in this act, shall be construed to include stage coaches, wagons, carts, sleighs, sleds, and every other carriage or vehicle used for the transportation of passengers and goods, or either of them.

§ 9. Nothing contained in this act shall interfere with or affect any law concerning hackney coaches or carriages in any of the cities or incorporated villages or towns of this state, nor interfere with nor affect the laws or ordinances of any such city or incorporated village or town for the licensing or regulating such coaches or carriages.

§ 10. For destroying or defacing any guide board, post or milestone, or any notice or direction put up on any bridge or otherwise, the offender shall forfeit a sum not less than three nor more than fifty dollars.

§ 11. If any person shall injure or obstruct a public road by falling a tree or trees in, upon or across the same, or by placing or leaving any other obstruction thereon, or by encroaching upon the same with any fence, or by plowing, or digging any ditch or other opening thereon, or by turning a current of water so as to saturate or wash the same, or hall leave the cuttings of any hedge thereupon, for more than five days, he] shall forfeit for every such offense a sum not exceeding ten dollars, nd an additional sum of not exceeding three dollars per day for every ay he shall suffer such obstruction to remain after he has been ordered o remove the same by any of the commissioners of highways or any member of the county board: *Provided*, this section shall not apply to ny person who shall lawfully fall any tree for use, and will immediately emove the same out of the road, nor to any person through whose land public road may pass, who shall desire to drain his land, and shall give due notice to the commissioners of such intention: *And, provided, also*, that any commissioners or overseers of highways, after having given reasonable notice to the owners of the obstruction, or person so obstructing such road, may remove any such fence or other obstruction, and recover the necessary cost of such removal from such owner or other person obstructing such road aforesaid.

§ 12. If any person shall ride, lead or drive any wagon, carriage, dray, cart or other vehicle or conveyance, or any horse, mare, mule or ox, or any other animal, faster than a walk, or shall intentionally drive more than thirty head of cattle, mules or horses at a time, over, on or across any bridge on a public road, upon which the commissioners of highways have erected the proper notice, according to the provisions of this act, within the limits of this state, he shall forfeit and pay for each offense the sum of five dollars.

§ 13. If any person shall purposely destroy or injure any public bridge, culvert or causeway, or remove any of the timber or plank thereof, or obstruct the same, he shall forfeit a sum not less than three dollars nor more than one hundred dollars, and shall be liable for all damages occasioned thereby, and all necessary costs of rebuilding or repairing the same.

§ 14. Justices of the peace shall have jurisdiction in all cases arising under this act, where the penalty does not exceed their jurisdiction.

§ 15. All suits for the recovery of any penalty under this act shall be brought in the name of the People of the State of Illinois, upon the complaint of any person.

§ 16. All fines recovered under the provisions of this act, unless otherwise hereinafter provided, shall be paid over to the commissioners of highways of the town or road district where the offense is committed, to be expended upon the roads and bridges in the town or road district.

§ 17. It shall be lawful for the owners or occupants of land bordering upon any public road to plant shade and ornamental trees along and in such road, at a distance not exceeding one-tenth of the legal width of the road from its margin; and also to erect and maintain a fence, so long as shall be actually necessary for the purpose of raising a hedge on said margin, a distance of four feet from and within said marginal line or lines.

§ 18. Any person owning, using or occupying lands on both sides of any public highway, shall be entitled to the privilege of making a crossing under said highway for the purpose of letting his cattle and other domestic animals cross said road: *Provided*, said person shall erect at his own expense, a good and substantial bridge, with secure railing on each side thereof, and build an embankment of easy grade, not to exceed a rise of one foot in ten on either side of said bridge—said bridge not to be less than sixteen feet wide, and to be approved by the commissioners of highways of the town or road district in which the bridge is built, and the same to be kept constantly in good repair by the owner or occupant of said land, subject to their direction: *And, provided, further*, that in case such crossing is made on any water way or natural channel for water, and where a culvert or bridge is maintained or required for road purposes, said owner or occupant shall not be required to pay for or construct any more of said crossing than the additional cost of such crossing over and above the necessary cost of a suitable culvert or bridge for road purposes at such place. And where any bridge on a public road is constructed over a stream or body of water, where the depth or current of water or the nature of the bank or banks of such stream or body of water is such as to render a fence on the marginal line of the public road impracticable, or very expensive to construct and keep in repair, the owner of the land bordering on the public road shall have the right to connect the road fence on either or both banks of the stream or body of water, to said bridge or any pier or abutment thereof, or to any embankment or timber approach to said bridge: *Provided*, that no necessary ford across said stream or body of water shall be permanently obstructed thereby: *And, provided, further*, that any such connecting fence shall be constructed by the consent and under the direction of the commissioners of highways of the town or road district in which the bridge may be located.

§ 19. The county board of any county in this state, upon the petition of the owner or owners of the adjoining property, shall have power to vacate any street or alley, or part thereof, in any unincorporated town or village, or addition thereto, within such county. No such vacation shall take effect until a copy of the order therefor, certified by the county clerk, shall be filed for record and recorded in the recorder's office of the county in which the street or alley is located; the cost of such vacation and record shall be paid by the petitioners.

§ 20. Before the county board shall act upon such petition, the petitioners shall give notice of the time and place of presenting the petition, by posting notices in three of the most public places in the town, road district or village where such street or alley is situated, four weeks previous to the time of presenting the petition, and give evidence to the county board of such posting by the affidavit of the person posting the same.

§ 21. On the vacation of any street, alley or road, the title to the same shall vest in the owners of the adjoining lands; the owners on either side taking to the center of the street, alley or road vacated: *Provided*, that in case such street, alley or road was taken from the lands on either side thereof, in different proportions, the same shall vest in the owners of the adjoining lands in the same proportion in which the same was so taken.

§ 22. In counties not under township organization each congressional township or fractional township which is or may hereafter be established a township for school purposes and for the election of the trustees of schools, shall be a district for road purposes: *Provided*, that in cases where the county line between adjoining counties divides a congressional township, and one county is and the other is not under township organization, that part of the congressional township so divided, lying within the county not under township organization, may be by the county board of said county attached to some adjoining congressional township (or fractional township) of said county, for the purposes of this act.

§ 23. The county board in counties not under township organization shall, on or before the twentieth day of August next, appoint three commissioners of highways, who shall be residents of the road district for which they shall be appointed, for each road district in their respective counties as designated in this act, who shall hold their office until their successors shall be elected and qualified according to the provisions of this act.

§ 24. In counties not under township organization, there shall be elected in each road district, in the year of our Lord eighteen hundred and seventy-three, at the same time and place of holding the election for trustees of schools in such congressional township, three commissioners of highways, one of whom shall hold his office for one year, one for two years, and one for three years, to be determined by lot at their first meeting after their election, and entered upon their records; and in each year thereafter, at the same time and place of holding the election for school trustees, one commissioner of highways shall be elected for the term of three years, and until his successor is elected and qualified. The election shall be conducted by the same judges that act as such at the election of school trustees.

§ 25. In towns under township organization there shall be elected at the annual town meeting in each year, as heretofore, one commissioner of highways, who shall hold his office for the term of three years, and until his successor is elected and qualified.

§ 26. No person shall be elected or appointed to the office of commissioner of highways unless he shall be an elector, and have resided in the town or district one year next preceding his election, and no commissioner of highways shall be at the same time one of the town board of auditors, or in any such capacity audit or assist in auditing any account or bill in which he is or has been directly or indirectly interested.

§ 27. Every person elected to the office of commissioner of highways, before he enters upon the duties of his office, and within ten days after he shall be notified of his election, shall take and subscribe, before some justice of the peace, the official oath or affirmation prescribed by the constitution, which, in counties not under township organization, shall be filed with the county clerk, and in counties under township organization with the town clerk.

§ 28. Vacancies in the office of commissioner of highways shall be filled by election: *Provided*, that a vacancy shall be filled by the remaining commissioners until the next election of commissioners after the vacancy shall occur.

§ 29. The commissioners of highways shall have power to enter into contracts in all matters within their jurisdiction, and in counties not under township organization may sue and be sued; in counties under township organization all suits concerning highways shall be in the name of the town, except as otherwise provided by law.

§ 30. At the first meeting of the commissioners of highways, which shall be within ten days after they shall have been elected and qualified, they shall proceed to choose one of their number clerk, whose duty shall be to keep a record of all proceedings of said board of commissioners, and perform such other duties as pertain to his office.

§ 31. They shall, at the same time, choose one of their number treasurer, who shall receive and have charge of all moneys raised in the town or road district for the support and maintenance of roads and bridges. He shall hold such moneys at all times subject to the order of the commissioners of highways, and shall pay them over upon their order, or on the order of a majority of said commissioners, and not otherwise. He shall execute bond in double the amount that will probably come into his hands during the year, by virtue of his office, payable to the People of the State of Illinois, for the use of such town or road district, with sufficient security, to be fixed and approved by the county clerk in counties not under township organization, and by the supervisor of the township in counties under township organization, conditioned for the faithful discharge of his duties as such treasurer, and that he will honestly and faithfully account for and pay over, upon the order of the commissioner of highways, all moneys that shall come into his hands by virtue of his said office. Said treasurer shall, for his services as treasurer, be allowed to retain two per centum on all moneys that he shall receive and pay out, except such moneys as may be paid over by him to his successor in office.

§ 32. The commissioners of highways, in their several towns and road districts, shall have the care and superintendence of highways and bridges therein, and it shall be their duty—

First—To repair roads and bridges in their respective towns and road districts, and to cause the building of bridges therein, when the public interest or necessity require it.

Second—To lay out and establish roads, to regulate the public roads therein, and to alter or vacate such roads as they, or a majority of them, shall deem proper, as hereinafter provided.

Third—To cause such roads used as highways as have been laid out or dedicated, but not sufficiently described, and such as have been used and recognized as public roads for twenty years, but not recorded, to be ascertained, described and entered of record in the office of the town clerk, or in the office of the county clerk in counties not under township organization, and to cause to be re-surveyed, platted and entered of record all roads in their respective towns or road districts, where the records of the surveys and plats of the same have been or may hereafter be lost or destroyed; and copies of all such re-surveys, plats and records hereby authorized to be made under this section, duly certified by the town or county clerk, as the case may be, shall be received in evidence, and have the same force and effect, as the original surveys, plats and records.

Fourth—To cause all highways, and all bridges over streams on highways, to be kept in repair, and to see that persons working or repairing the highways leave undisturbed all stones or other monuments marking sectional and other corners, which may be in the public roads worked or repaired by them.

Fifth—To take possession of and keep all scrapers, plows, and other tools belonging to their towns and road districts, wherever the same may be found, and not allow the same to go to waste, and not to lend the same, except to persons employed by them to work on the roads by contract or otherwise.

Sixth—To purchase for use upon highways such necessary tools, implements and machinery as they may think proper.

Seventh—To collect all fines and commutation money.

Eighth—To cause to be erected and kept in repairs, at the forks or crossing place of the most important public roads, a post and guide boards, with plain inscriptions thereon in letters and figures, giving directions and distances to the most noted places to which such road may lead; to prevent thistles, burdock, cockle-burs, mustard, yellow-dock, Indian mallow, jimson weed (*Stramonium durata*) from seeding, and to extirpate the same so far as practicable, and to prevent all rank growth of vegetation in the public highway, so far as the same may obstruct public travel; and the said commissioners may, in their discretion, sink and construct wells, with a suitable pump or other suitable fixture, and a water trough attached thereto, not exceeding five in any district or town, and keep the same in repair, for public use for watering teams, at the intersections of the most important roads in their towns or road districts; and they may also adopt any other suitable and convenient mode of supplying water in troughs conveniently situated on the public highways for public use, at other points than at such intersections; and the cost of such improvements shall be paid out of the road and bridge funds of such town or road district.

Ninth—To cause boards to be placed upon the bridges of more than fifty feet span, across the principal streams in their respective towns and road districts. Said boards shall be elevated, so as to be easily seen by travelers, and on each side of said board shall be printed, in capital letters, the words "Five dollars fine for leading or driving any beast faster than a walk, or driving more than thirty head of cattle, mules or horses at a time, on or across this bridge."

Tenth—To remove fallen timber or any other obstruction from, and repair injuries to, roads and bridges, caused by any person, and to prosecute for and recover the cost thereof, in all cases where any person shall be liable therefor.

Eleventh—To assess and collect the poll-tax, as hereinafter provided.

Twelfth—To assess, annually, upon the real and personal property in their respective towns and road districts, as hereinafter provided, a tax not exceeding forty cents on a hundred dollars, assessed valuation, by the last county assessment: *Provided*, that the tax on property lying within any incorporated village, town or city, in which the streets and alleys are under the care of the corporation, shall be paid over to the treasurer of such village, town or city, to be appropriated to the improvement of roads, streets and bridges where such tax is collected, as the corporate authorities may desire it.

§ 33. Commissioners of highways, in counties under township organization, shall render to the board of town auditors, at their annual meeting for auditing the accounts of town officers, and in counties not under township organization to the county board, an account in writing, stating:

First—The amount of real estate and personal property tax received by them.

Second—The sums received by them on account of poll tax.

Third—All sums received by them for fines and commutations.

Fourth—The amount received by them from all other sources.

Fifth—The amount expended by them for all purposes, specifying by items the date, purpose and amount of each expenditure, and to whom paid.

Sixth—The names of all persons assessed for poll tax.

Seventh—The names of all persons who have paid or worked out their poll tax.

Eighth—The names of all persons who have been fined, and the sums which they have been fined, and what fines remain unpaid.

§ 34. The board of auditors or county board may require such accounts to be verified by the oath or affirmation of the commissioners.

§ 35. The accounts of the commissioners of highways, approved by the auditors or county board, shall be so certified; those rejected shall be so marked.

§ 36. The accounts so audited, including those rejected, shall be delivered to the town or county clerk, as the case may be, to be kept by him on file for the inspection of any of the inhabitants of the respective towns and road districts.

§ 37. In counties not under township organization a copy of the accounts so audited shall be retained by the clerk of the highway commissioners, and produced by him, at the next annual meeting in the road district, and there read by one of the commissioners of highways for the information of the inhabitants of said road district.

§ 38. At the annual town or road district meeting, the commissioners shall make a written statement of the improvements necessary to be made on the roads and bridges in their town or road district, during the next ensuing year, and an estimate of the probable expense of making the same.

§ 39. They shall also make a written estimate of the probable income from poll tax, and such real and personal tax as they are authorized by law to levy.

§ 40. In counties under township organization, all road matters shall be acted upon at the same time as other town matters, and in counties not under township organization, at two o'clock in the afternoon, at which time the voters present in the road district may elect one of their number chairman.

§ 41. If the commissioners of highways, or any three legal voters, shall give notice, by posting notices in at least three of the most public places in the town or road district at least ten days before the annual meeting, that a larger amount of money will be required, for the purpose of constructing or repairing roads or bridges in their town or road district, than can be realized from the poll tax and real and personal property tax authorized by law to be assessed by the commissioners, the legal voters present at such meeting may authorize an additional amount to be raised by tax, not exceeding sixty cents on each one hundred dollars valuation.

§ 42. The highway commissioners of each town and road district shall annually ascertain, as near as practicable, how much money must be raised by tax on real and personal property, for highway purposes, during the ensuing year; and they shall, in counties under township organization, give to the supervisor of the township, and in Cook county to the county board, a statement of the amount necessary to be raised—signed by a majority of said commissioners—on or before the Tuesday next preceding the annual September meeting of the board of supervisors, who shall cause the same to be submitted to said board for their action at such September meeting of said board. And in counties not under township organization, said amount required to be raised, with a list of the resident taxpayers, alphabetically arranged, shall be certified and returned to the county clerk, on or before the first Monday in September in each year: *Provided*, that if the amount to be raised is determined by a vote at the town or road district meeting, that fact and amount shall be so certified and returned as aforesaid.

§ 43. According to the amount certified as aforesaid, the county clerk, when making out the tax books of state and county taxes for the collector, shall extend the necessary tax in a separate column against each taxpayer's name, or taxable property, as other taxes are extended, which shall be collected the same as state and county taxes.

§ 44. It shall be the duty of the county clerk to make out and deliver on demand, to the treasurer of the commissioners of highways, a certificate of the aggregate amount of tax so levied and placed upon the tax books.

§ 45. The tax so collected shall be paid to the treasurer of the commissioners of highways, by the collector or sheriff, as the case may be, as fast as the same is collected, except such rate per cent. as shall be allowed for collecting the same.

§ 46. The commissioners of highways shall, on or before the first day of May in each year, make out and deliver to their treasurer a list of able-bodied men in their town or district, between the age of twenty-one and fifty years, and shall assess against each person upon such list the sum of two (2) dollars, as a poll tax, for highway purposes, to be paid to such treasurer by the first Monday in July of each year.

§ 47. Within thirty days after such list is delivered to such treasurer, he shall cause written or printed notice to be given to each person so assessed, notifying him of the time when, and place where, such tax must be paid, or its equivalent in labor performed.

§ 48. If the amount so assessed shall not be paid nor the labor performed by the first Monday of July in such year, or within ten days after notice—if notice is given after that time—it shall be the duty of the treasurer to bring suit therefor against such person, before some justice of the peace having jurisdiction—if in a county under township organization, in the name of the town, or if in a county not under township organization, in the name of the commissioners of highways.

§ 49. The commissioners of highways may alter, widen or vacate any road, or lay out any new road in their respective town or road district, when petitioned by any number of freeholders, not less than twelve (12), residing within three miles of the road so to be altered, widened, vacated or laid out. Said petition shall set forth, in writing, a description of the road, and what part thereof is to be altered, widened or vacated, and if for a new road, the names of the owners of lands, if known, and if not known it shall be so stated, over which the road is to pass, the points at which it is to commence, its general course, and the place at or near where it is to terminate.

§ 50. Whenever any such number of freeholders determine to petition the commissioners of highways for the alteration, widening or vacation of any road, or laying out any new road, they shall cause a copy of their petition to be posted up in three of the most public places in the town or road district, in the vicinity of the road to be laid out, altered, widened or vacated, at least ten days before any action shall be had in reference to such petition. The posting of any notice required by this act may be proved by the affidavit of the person posting the same, or by other legal evidence.

§ 51. Whenever the commissioners of highways shall receive any such petition, with proof of the posting of copies, as in the next preceding section specified, they shall fix upon a time when and where they will meet to examine the route of such road, and to hear reasons for or against the altering, widening, vacating or laying out of the same—which meeting shall be within fifteen days of the time of receiving such petition; and they shall give at least ten days' notice of the time and place of such meeting, by posting up notices in three of the most public places in the township or road district, in the vicinity of the road to be widened, altered or vacated. The commissioners may, by public announcement and by the posting of a notice at the time and place named for the first meeting, adjourn the meeting from time to time, but not for a longer period than twenty days in all; and shall at the first, or such adjourned meeting, within said twenty days, decide and publicly announce whether they will grant or refuse the prayer of the petition, and shall indorse upon or annex to the petition a brief memorandum of such decision, to be signed by the commissioners. Such decision shall be subject to revocation, in case the prayer of the petition is granted, in the manner hereinafter provided. In case the commissioners refuse to grant the prayer of the petition, they shall within ten days thereafter file the same so indorsed, or with such decision annexed thereto, in the office of the proper town or county clerk, as the case may be.

§ 52. If the petition is simply for the vacation of a road, and the commissioners of highways, or a majority of them, shall, at such meeting, decide that the prayer of the petitioners should be granted, they shall order such road to be vacated—a copy of which order, together with the petition, shall be by them filed with the county clerk of the proper county, in counties not under township organization, and recorded by such clerk in a book provided for that purpose; but in counties under township organization they shall file a copy of such order, together with the petition, with the town clerk, such order to be so filed within ten days after the date of such decision.

§ 53. If such petition is for the establishment of a new road, or the alteration or widening of an existing road, and the commissioners of highways, or a majority of them, shall be of the opinion that the prayer of the petitioners should be granted, they shall cause a survey and a plat of such road to be made by a competent surveyor, who shall report such survey and plat to said commissioners, giving the courses and distances, and specifying the land over which such road is to pass—in which they may make such changes between the termini of the road described in the petition as the convenience and interest of the public, in their judgment, may require. They shall also, before they order any road to be established, altered, widened or vacated, ascertain the aggregate amount of damages which the owner or owners of the land over which such road is to pass shall be entitled to, by reason of the location, alteration or vacation of such road: *Provided, however*, that in case an appeal is taken from the assessment of damages before the justice of the peace, the commissioners may, in their discretion, make an order laying out, widening, altering or vacating such road, either before or after such appeal is determined, in the manner hereinafter provided.

§ 54. The damages sustained by the owner or owners of the land, by reason of the establishment, alteration, widening or vacation of any road, may be agreed upon by the owners of such lands, if competent to contract, and the commissioners of highways, or they may be released by such owners—in which cases the agreement or release shall be in writing, and shall be filed and recorded with the copy of the order establishing or altering such road, and shall be a perpetual bar against such owners, their grantees and assigns, for all further claims for such damages.

§ 55. In case such damages are not released or agreed upon, as in the preceding section specified, the commissioners of highways shall, within twenty days from the date of the meeting at which it was decided to grant the prayer of the petition, make a certificate that they are about to establish, widen, vacate or alter a public road, describing such road, vacation, widening or alteration, and the land over or on which such road is to be established, altered, widened or vacated, and naming the owners of such land, if known, and if not known stating that fact, and asking for a jury to assess the damages of such owners; and shall present such certificate to some justice of the peace of the county, who shall summon a jury of six persons in the manner hereinafter provided, having the qualifications of jurors, to appear before such justice of the peace at a time to be fixed by him, within ten days from the time such certificate was presented to him, to assess such damages. The commissioners of highways shall also notify each and every owner of land—if known, and a resident of the county—whose damages are to be assessed, that they will apply to some justice of the peace of the county (giving the time when and the place where) to have a jury impanneled to assess such damages. Upon the presentation of such certificate by the commissioners of highways, the justice of the peace shall forthwith name eighteen (18) persons having the qualifications of jurors, and who shall also be freeholders, one third of whom shall not be residents of the town or road district in which the proposed road is located. The commissioners of highways shall have the right to strike from such list of names the names of six of such persons named; and the owners of the lands whose damages are to be assessed, or their authorized agent or agents, shall also have the right to strike from such list the names of six other persons; and the six persons whose names still remain on said list shall comprise the jury to assess such damages: *Provided*, that if the commissioners of highways and the owners of lands shall fail to strike from such list the names of twelve persons, the justice of the peace shall select from the names still remaining the six persons to constitute said jury. At the trial of the case, either party shall have the right of challenge for cause, and for that only: and any deficiency in the number of jurors, from whatever cause, shall be supplied by summoning other persons residing in the township or road district, or in an adjoining township or road district. Such justice of the peace shall notify the owners of such land mentioned in such certificate to appear at the same time before such justice to prove their damages. In case it shall appear, either from the certificate of the commissioners, the affidavit of any person, or the return of any officer to whom the notice may be delivered for service, that there is any unknown owner or owners who cannot be found and served within the county, such justice shall also cause notices to be posted in three of the most public places in the vicinity of such proposed road or alteration, at least six days before the time fixed for the appearance of such jury, stating when such jury is to be impanneled by him, and describing the road to be established, altered, widened or vacated as petitioned for, and the lands for which damages are to be assessed.

§ 56. The notice to such owners of lands may be served by any constable or one of the petitioners, or other person of lawful age, at least five days before the time of appearance. If any of such owners is an infant, such summons shall be served by delivering a copy to the infant or its guardian, if any: if no guardian, the person with whom he or she resides; if any owner is a lunatic or habitual drunkard (having a conservator) or insane, by delivering a copy to his conservator, if any; if any such owner is a married woman, by delivering a copy to her.

§ 57. The jury shall appear before and be sworn or affirmed by such justice, faithfully and impartially to assess the damage of each of the owners specified in such certificate, or those of them whose claims are then to be adjusted, according to law to the best of their judgment and understanding, and all parties in interest shall be entitled to subpenas and other writs and papers, and the trial shall be conducted as in other civil cases. The jury shall hear such lawful evidence touching the question of such damages as may be presented to them; and shall also, on request of a majority of the road commissioners or owners of lands whose damages are to be determined, in a body, visit and examine the proposed location, alteration, widening or vacation of such road, and the lands to be taken and affected thereby, and make a written verdict specifying the amount of damages, if any, which each such owner shall recover, and return the same to such justice, to be by him entered on his docket in the nature of a judgment, to be paid by such commissioners, together with the costs of such suit, in case they shall finally determine to establish, alter, widen or vacate such road; and the money therefor shall be paid by the town or road district, out of the funds in the hands of the treasurer of the commissioners of highways, raised for road and bridge purposes, or any person interested in such road: *Provided*, that when there are several such owners the jury may assess the damages of one or more or all of them at the same time, or they may assess such damages at different times, or there may be different juries and trials at different times for different owners, as a majority of the commissioners of highways may determine; and any such assessment of damages may be continued from time to time, for good cause, with the like effect as continuances in other cases before justices of the peace.

§ 58. The commissioners of highways, or any person interested in such verdict, may appeal from such judgment to the circuit court of the proper county, at any time within twenty days from the rendition of such judgment, by giving bond, with approved security, to be approved by such justice of the peace or by the clerk of the circuit court to which the appeal is taken. Infants may appeal by their guardian or next friend, lunatics or insane persons by their conservator or next friend, and married women by themselves or their husbands, or jointly with their husbands; and the bonds so executed by them, respectively or jointly, shall be valid against persons under such disability and their securities.

§ 59. When an appeal is taken, the justice of the peace shall, within ten days from the time the appeal is perfected, send all the papers, with a certified copy of his docket, to the office of the clerk of the court to which such appeal is taken.

§ 60. The trial of such appeal shall be as in other appeal cases, and the judgment of the court shall be, that the amount so found for the owners, if any is so found, shall be payable with cost, as provided in section fifty-seven (57) of this act.

§ 61. Within thirty days after the total amount of damages shall have been ascertained, either by release or the agreement of parties, or by assessment before a justice of the peace and a jury, in the manner hereinbefore provided, the commissioners shall hold a meeting to finally determine upon the laying out, altering, widening or vacation of such road, of which meeting said commissioners shall give public notice, by causing not less than three notices thereof to be posted in public places within the town or road district, at least five days prior thereto. In cases where the damages are not wholly released or agreed upon, and the commissioners shall be of the opinion that the damages assessed by the jury are manifestly too high, and that the payment of the same would be an unreasonable burden upon the taxpayers of the town or road district, the commissioners may revoke all proceeding had upon the petition by a written order to that effect; and such revocation shall have the effect to annul all such proceedings and assessments, releases and agreements, in respect to damages growing out of the proceedings upon the petition, unless the decision of the commissioners is appealed from and reversed or modified on such appeal, as herein provided. In case the commissioners shall not revoke such prior proceedings, they shall make an order, to be signed by them, declaring such road so altered, widened or laid out, a public highway, and which order shall contain or have annexed thereto a definite description of the line of such road, together with a plat thereof. The commissioners shall, within ten days from the date of such order, cause the same, together with the report of the surveyor, the petition, and releases or agreements in respect to damages, to be deposited and filed in the office of the town clerk, and in counties not under township organization in the office of the county clerk; and such clerks shall respectively note upon such order the date of such filing. It shall be the duty of such clerks, after the time for appeal to supervisors or other commissioners has expired, and in case of such appeal after the same shall have been determined, in case the prayer of the petition is granted, to record such order, together with the plat of the surveyor, in a proper book to be kept for that purpose. In cases where the damages claimed by the land owners, for the right of way, is released, or is agreed upon between the land owners and the commissioners, the commissioners may, at their first meeting, or at any adjourned meeting, examine the route of the road, and cause a survey thereof to be made, and make their order establishing, altering, widening or vacating the road, according to the prayer of the petition, and return the same within the time and in the manner specified in this act.

§ 62. In case the person to whom any damage is assessed, is not a resident of the county, or is under disability, the amount of the damages assessed to such person may be deposited with the justice of the peace, or clerk of the court where the judgment for such damages is entered or was recovered, and no road shall be opened until such damages have been so deposited, or the amount thereof has been tendered or paid to the person entitled to receive the same.

§ 63. Any person or persons interested in the establishment, alteration, widening or vacation of any road in this state, are hereby authorized to offer inducements to the commissioners of highways, for the establishment, alteration, widening or vacating of any such road, by entering into contract with said commissioners, conditioned upon such establishment, alteration, widening or vacating, to pay money or any other valuable thing to the town or road district, for the benefit of the road and bridge funds of the same, or to perform any labor, or to construct any road, bridge or culvert on any road which said person or persons desire to have established, widened or altered. And such contracts, in writing, made with said commissioners, shall be deemed good and valid in law, and may be enforced by said commissioners or their successors in office, before any court having jurisdiction.

§ 64. The record of the county or town clerk, as the case may be, or a certified copy of such record and papers, relating to the establishment, location, alteration, widening, or vacation of any road, shall be *prima facie* evidence inall cases that all the necessary antecedent provisions had been complied with, and that the action of the commissioners of highways, or other persons and officers, in regard thereto, were regular in all respects.

§ 65. Private roads, and cartways for private and public use, leading from any dwelling or land to a public road, or from one public road to another, may be located and established in the same manner as provided in this act for public roads, except that the same may be petitioned for by one or more persons; and the petition shall state the width of road desired by the petitioners; and such roads and cartways shall not be more than fifty feet wide; and in all cases the petitioner or petitioners shall pay all the costs of such location, and all the damages that may be awarded to the owners of the land over which such private road or cartway shall run, before the same shall be opened, unless the jury which assesses such damages should award, or the commissioners of highways shall agree, that a part of such damages be paid by the town or road district; and all parties interested shall have the same right to appeal in all cases, as provided in this act for publi roads.

§ 66. If such private road or cartway shall not be opened by the petitioners or their assigns within one year from the time of making th order for the location of the same, such order shall be regarded as rescinded.

§ 67. When such private road or cartway is proposed to pass over inclosed lands, the owners of such lands shall have a reasonable time, not exceeding eight months, to be designated by the commissioners of highways, to harvest crops and remove fences which may be on such land, before such road or cartway shall be opened.

§ 68. The commissioners of highways may, in their discretion, pay persons who live on or have private roads, which are used by the public, for work done on such roads; but in no case shall they be allowed more than the amount of their road tax for the year in which the work is done.

§ 69. Public roads may be established, altered, widened or vacated on township or county lines, in the same manner as other public roads, except that in such case a copy of the petition shall be posted up in and presented to the commissioners of highways of each town or road district interested; whereupon it shall be the duty of the commissioners of highways of the several towns or districts to meet and act as one body, in the same time and manner as in other cases, in considering the petition, viewing the premises, adjusting damages and making all orders in reference to such proposed road, alteration, widening or vacation, and a majority of all such commissioners must concur in all such orders; and a copy of all final orders and plats and papers shall be filed and recorded in each of the counties, towns, or road districts interested. They shall also, in case a new road is established, allot to each of such towns or districts, the part of such road which such town or district shall open and keep in repair, and the part so allotted shall be considered as wholly belonging to such town or district. They shall also divide the expenses and damages which may accrue from such location, widening or alteration, and if they cannot agree they shall refer the matter to three disinterested freeholders, as arbitrators, whose decision shall be final.

§ 70. Any person or persons interested in the decision of the commissioners of highways, in determining to, or in refusing to lay out, alter, widen or vacate any road, or revoking any previous order or decision relative to any road, may appeal from such decision to three supervisors of the county outside of the town in which such road or proposed road is located, by giving a written notice of such appeal to the said commissioners of highways, and to at least three of the petitioners, and also, to the same parties, a notice when and where such appeal will be tried, at least three days before such trial, within ten days after such decision has been filed in the office of the proper clerk and shall also present a written petition to some justice of the peace the county, asking for an appeal, and stating on what grounds such appeal is taken. It shall be the duty of the justice of the peace to cause to be summoned three supervisors of the county, to hear such appeal; and said supervisors shall fix upon a time and place when said appeal will be heard by them; and upon such appeal, the said supervisors shall have the same power and authority that is by this act conferred on the commissioners of highways, not only in regard to the laying out, altering, widening or vacating any road, but shall have the same power to cause a jury to be called to assess damages—whenever the state of the proceedings may require it, and the supervisors cannot agree with the owners of land in regard to the same. And they shall make a report of their proceedings and decision in the case, and in like manner, that is, by this act, required by the highway commissioners, and shall be entitled to the same compensation; and their decision shall be final in regard to laying out, altering, widening or vacating such road, or in refusing to do the same, for one year after such decision. Any parties taking an appeal from the award or the decision of the three supervisors, highway commissioners, or the verdict of a jury, shall pay the cost of such appeal, in case the award or the decision of said supervisors, highway commissioners or the verdict of a jury, is in all things sustained; and shall file a sufficient bond with the justice of the peace, town or county clerk—as the case may be—before taking such appeal, guaranteeing such payment in such case. In cases of appeal, as provided for in this section, in counties not under township organization, the appeal shall be to three commissioners of highways of some road district in the county, other than the road district in which the appeal is taken, who shall have the same powers and compensation and perform the same duties that is required of the three supervisors in this section.

§ 71. The decision of a majority of the supervisors or commissioners of highways, selected, in any appeal case, or of the commissioners of highways in any case before them, shall be taken as the decision of said supervisors or commissioners of highways.

§ 72. When the commissioners of highways of one town or district disagree with the commissioners of highways of an adjoining town or district, in regard to the laying out of a new road, or the alteration, widening or vacation of an old road, on any county, town or district line, appeals may be taken from such decision, in the same manner as set forth in section seventy of this act: *Provided*, that when such decision is in regard to a road on a county line, in counties under township organization, two supervisors and one commissioner of highways shall be selected from one county, and two commissioners of highways and one supervisor shall be selected from [the] other. The county from which the two supervisors shall be selected, shall be determined by the party or parties taking the appeal; and the justice of the peace shall issue his summons accordingly. In counties not under township organization, three commissioners of highways shall be selected from one county interested and four from the other.

§ 73. All roads heretofore laid out upon town, district or county lines, shall be divided, allotted, and kept in repair, in the manner as hereinbefore directed. Any public road that is or shall hereafter be laid out on a county or town line, shall be held to be a road on a county or town line, although, owing to the topography of the ground along said county or town line, or at the crossing of any stream of water, the proper authorities, in establishing or locating such road, may have located a portion of the same to one side of such county or town line.

§ 74. Roads may be laid out and opened upon the line between this and any adjoining state, as provided in the preceding sections, whenever the laws of such adjoining state shall be applicable.

§ 75. Bridges over streams which divide towns, counties or road districts, and bridges over streams on roads on county, town or district lines, shall be built and repaired at the equal expense of such towns, counties or road districts.

§ 76. For the purpose of building or keeping in repair such bridge or bridges, it shall be lawful for the commissioners of highways of such adjoining towns, counties or road districts, to enter joint contracts; and such contracts may be enforced, in law or equity, against such commissioners, jointly, the same as if entered into by individuals, and such commissioners may be proceeded against, jointly, by any parties interested in such bridge or bridges, for any neglect of duty in reference to such bridge or bridges, or for any damages growing out of such neglect.

§ 77. If the commissioners of highways of either of such towns or road districts, after reasonable notice in writing from the commissioners of highways of any other of such towns or road districts, shall neglect or refuse to build or repair any such bridge, when any contract or agreement has been made in regard to the same, it shall be lawful for the commissioners so giving notice, to build or repair the same, and to recover by suit one half (or such amount as shall have been agreed upon) of the expense of so building or repairing such bridge, with costs of suit and interest from the time of the completion thereof, from the commissioners so neglecting or refusing.

§ 78. Any judgment so recovered against the commissioners of highways of either of such towns or road districts, shall be a charge on such town or road district, as the case may be, unless the court shall certify that the neglect or refusal of such commissioners was willful or malicious, in which case only such commissioners shall be personally liable for such judgment, and the same may be enforced against them in their personal and individual capacity.

§ 79. When it shall be necessary to build, construct or repair any bridge or road in any town or road district, which would be an unreasonable burden to the same, the cost of which will be more than can be raised by ordinary road taxes in such town or road district, the commissioners of highways shall present a petition to the county board of the county in which such town or road district is situated, praying for an appropriation from the county treasury to aid in the building, constructing or repairing of such bridge or road; and such county board may make an appropriation of so much for that purpose as, in their judgment, the nature of the case requires and the funds of the county will justify—said appropriation to be expended under the supervision of an authorized agent or agents of the county, if the county board shall so order.

§ 80. Whenever it shall be represented to the county board of any county, by the petition of at least twenty-five legal voters of such county or of an adjoining county, that any bridge or road, in any town or road district, or any bridge or road on any town, district or county line in such county, should be built, constructed or repaired, and that the same has been improperly neglected by the commissioners of highways of such town or road district, the county board, if, on investigation, they are satisfied the interests of the public demands that such road or bridge should be built, constructed or repaired, and that such town or road district has sufficient means to build, construct or repair the same, shall by resolution direct the commissioners of highways of such town or road district, whose duty it is to construct or repair the same, to build, construct or repair the same, or such part thereof as they shall deem reasonable, within the time to be specified in such resolution, and shall cause a copy of such resolution to be served on the commissioners of highways of such town or road district; whereupon such commissioners of highways shall build, construct or repair such bridge or road as directed in such resolution of the county board; and if said commissioners of highways shall fail or refuse to build, construct or repair such bridge or road, or culvert, as directed by such resolution, the county board shall authorize some person to build, construct or repair the same, and cause the necessary amount of the cost thereof to be extended on the tax list of such town or road district, and collected as other road taxes, and applied to pay for such improvement: *Provided*, that no work shall be ordered to be done or performed, under the provisions of this section, that will cost more than ten cents on each one hundred dollars' valuation of taxable property of the town or road district by the last preceding assessment of the same.

§ 81. The county boards of the several counties in this state, not under township organization, shall provide necessary well-bound books, in which the county clerk shall record all the papers, plats and surveys, and orders relating to the roads which have been or may be established in the several road districts in his county, when the same are reported to him, to be filed in his office.

§ 82. Upon the petition of twelve (12) legal voters, it shall be the duty of the commissioners of highways of each town and road district, within a reasonable time, to employ a competent surveyor, and have any road or roads designated in such petition in their several towns and road districts re-surveyed, and plats thereof made, which plats and surveys shall be by them filed for record in the office of the township or county clerk, as the case may be: *Provided*, that this section shall not apply where the same has been already done, unless the exact location of such road is uncertain.

§ 83. The establishment of a new road on the route of a road already established according to law, shall not vacate the road previously established, unless such vacation is prayed for in the petition, and so declared in the order establishing the new road.

§ 84. The commissioners of highways of the several towns and road districts are hereby authorized to contract for the building of bridges, the constructing of roads, and the repairing of bridges and roads in their respective towns or road districts, and they may let such contracts by a public letting to the lowest responsible bidder, upon proper notice being given by posting copies of such notice in at least three public places in their town or road district, not less than ten days before the time of such public letting; or if they deem it to be the interest of their town or road district, they may, to an amount not to exceed twenty-five dollars, privately contract with persons, as they shall deem best, for putting and keeping the roads and bridges in good repair; but in no case shall such contracts exonerate such commissioners from liability for failure to keep such bridges or roads in repair: *Provided*, that the collector of taxes shall receive from any taxpayer, in payment of said tax payer's road and bridge tax, any order of the commissioners highways, on their treasurer, for work done on, or material furnished for the construction or repairs of the highways or bridges, in any sum not to exceed the amount of such person's road and bridge tax then due.

§ 85. The commissioners of highways may contract with persons owing poll tax for road purposes to perform a certain amount of labor on any road or bridge in their town or road district, for the amount of such tax, and if the work is done within the time that the money should have been paid, the commissioners shall give such person an order on their treasurer, which shall be received by him, instead of the money.

§ 86. Whenever a public road or highway shall pass over low or wet lands, and it shall be necessary to drain the same in order to render the said road dry and passable, and the said road cannot readily or conveniently be drained without laying or digging a ditch or ditches over or across the adjacent lands, it shall be lawful for the commissioners of highways, or other persons whose duty it is to cause the said road to be made passable, to enter upon the said adjacent lands and construct the required ditch or ditches over and upon the same; and in case the said commissioners or persons shall be unable to agree with the owner or owners of such lands as to the amount of damages to be allowed and paid to such owner or owners, the same shall be fixed and ascertained in the manner and with like proceedings as provided in this act in case of damages in the location or alteration of roads.

§ 87. Whenever a public road is ordered to be established, or altered, according to the provisions of this act, which road shall pass through or on inclosed lands, the commissioners of highways shall give the owner or occupant of such lands sixty days' notice, in writing, to remove his fences. If such owner or occupant does not remove his fence within sixty days after such notice, the commissioners shall cause the same to be removed, and direct the road to be opened and worked; and such owner shall forfeit to such commissioners the sum of one dollar for every day he shall permit his fence to remain after the expiration of said sixty days, and shall pay all necessary cost of removal, to be collected by said commissioners before any justice of the peace having jurisdiction.

§ 88. All public roads established by the order of the commissioners of highways, shall be sixty-six (66) feet wide, except in cases of roads not over two (2) miles long the road may be of any width, not less than thirty-three (33) feet, if so prayed for in the petition, and not otherwise. All public roads shall be opened within one year from the time the order establishing them was recorded. If not assessed [opened] within the time aforesaid, that part not so opened shall be deemed vacated.

§ 89. If the commissioners of highways shall refuse or neglect to perform any of the duties enjoined on them by this act, they shall severally forfeit not less than five dollars nor more than fifty dollars, and may be proceeded against, severally or jointly, for the recovery of such forfeiture, before any justice of the peace in the proper county in the name and for the use of the informer.

§ 90. The commissioners of highways shall receive for their services the sum of two dollars per day for each day necessarily employed in the performance of their duties, the same to be audited by the town auditors or the county board, and paid out of the town or county funds, as the case may be.

§ 91. Whenever the term "county board" is used in this act, it shall be held to mean the board of supervisors in counties under township organization, and to mean the county commissioners or board of county commissioners in counties not under township organization.

§ 92. All laws heretofore existing that may in any way conflict with the provisions of this act, and all laws in relation to overseers of highways and road supervisors, shall be and are hereby repealed.

§ 93. This act to take effect and be in force from and after the fifteenth day of August next.

Approved April 10, 1872.

DRAINS AND LEVEES.

N ACT to provide for the construction and protection of drains, ditches, levees and other works.

Section 1. *Be it enacted by the People of the State of Illinois, presented in the General Assembly,* That whenever one or more wners or occupants of lands shall desire to construct a drain or drains, itch or ditches, across the lands of others, for agricultural and sanitary urposes, such person or persons may file a petition in the county court the county in which the drain or drains, ditch or ditches shall be oposed to be constructed, setting forth the necessity of the same, with description of its or their proposed starting point, route and terminus; id if it shall be deemed necessary for the drainage of the land of such titioners that a levee or other work be constructed, the petitioners all so state, and set forth a general description of the same as pro- sed, and may pray for the appointment of commissioners for the nstruction of such work, pursuant to the provisions of this chapter.

§ 2. Such petition having been filed, as provided in the preceding section, the petitioners shall cause at least two weeks' notice to be given by posting notices in at least three of the most public places in each congressional township through which the drain or drains, ditch or ditches, levee or other work is or are proposed to be constructed, or if the same shall not be inhabited, in the nearest inhabited township, and by publishing a copy thereof in some newspaper published in the county in which the petition is filed, at least once in each week for two successive weeks; or if no newspaper is published in such county, then in the nearest newspaper published in the state. Such notice shall state when and in what court the petition is filed, the starting point, route and terminus of the proposed drain or drains, ditch or ditches, or levees; and if a levee or other work is intended to be constructed in connection therewith, shall so state, and at what term of court the petitioners will ask a hearing upon such petition.

§ 3. The county court in which such petition shall be filed, may hear the petition at any probate or law term thereof, and may determine all matters pertaining thereto under this act, and may adjourn the hearing from time to time, or continue the case for the want of sufficient notice, or other good cause.

§ 4. In case the drain or drains, ditch or ditches, levee, or other work proposed to be constructed, shall pass through or over, or be constructed upon lands lying in different counties, the petition may be filed in the county court of either of such counties.

§ 5. On the hearing of any petition filed under the provisions of this chapter, all parties through or upon whose land any of the proposed work may be constructed, or whose land may be damaged or benefited thereby, may appear and contest the necessity or utility of the proposed work, or any part thereof, and the contestants and petitioners may offer any competent evidence in regard thereto. If it shall appear to the court that the proposed drain or drains, ditch or ditches, levee or other works, is or are necessary, or will be useful for the drainage of the lands proposed to be drained thereby for agricultural and sanitary purposes, the court shall so find, and appoint three competent persons as commissioners to lay out and construct such proposed work. In case the lands to be drained shall be situated in different counties, not more than two of the commissioners shall be chosen from any one of such counties. If the court shall find against the petitioners, the petition shall be dismissed at the cost of the petitioners.

§ 6. Before entering upon the duties of their office, such commissioners shall take and subscribe an oath faithfully to discharge the duties of their office without favor or partiality, and to render a true account of their doings to the court by which they were appointed, whenever required by law or by the order of the court.

§ 7. They shall elect one of their number chairman, and may elect one of their number, or some other person, as secretary.

§ 8. A majority of the commissioners shall constitute a quorum, and a concurrence of a majority of their number in any matter within their duties, shall be sufficient.

§ 9. As soon as may be after their appointment, or within such time as the court may direct, the commissioners shall examine the land of the petitioners proposed to be drained, and the lands over or upon which the work is proposed to be constructed, and inquire and determine—

First—Whether the starting point, route and terminus of the proposed drain or drains, ditch or ditches, and if a levee or other work is proposed, the proposed location thereof, is or are in all respects proper or most feasible; and if not, what is or are so.

Second—The probable cost of the proposed work, including all incidental expenses, and the expenses of the proceeding therefor.

Third—What lands will be injured thereby, and the probable aggregate amount of all damages such lands will sustain by reason of the laying out and construction of the proposed work.

Fourth—What lands will be benefited by the construction of the proposed work, and whether the aggregate amount of benefits will equal or exceed the costs of constructing such work, including all incidental expenses and costs of the proceeding.

§ 10. If the commissioners shall find that such costs and expenses are more than equal to the benefits there will be bestowed upon the land to be benefited, they shall so report, and the proceedings shall be dismissed at the cost of the petitioners.

§ 11. If the commissioners shall find that the proposed work, or such portion of the same as will be satisfactory to the petitioners, can be done at a cost and expense not exceeding such benefits, they shall proceed to have the proper surveys, profiles, plans and specifications thereof made, and shall report their conclusions and a copy of such surveys, profiles, plans and specifications to the court which appointed them.

§ 12. The commissioners shall not be confined to the point of commencement, route or terminus of the drains or ditches, or to the number, extent or size of the same, or the location, plan or extent of any levee or other work to that proposed by the petitioners, but shall locate, design, lay out and plan the same in such manner as they shall think will drain the petitioners' land with the least damage, and greatest benefit of all lands to be affected thereby; and any plans proposed by such commissioners may, on the application of any person interested, or of the commissioners, be altered, upon the order of the court, in such manner as shall appear to the court to be just.

§ 13. Upon the report of the commissioners being filed with the clerk of the court appointing such commissioners, they shall cause notice to be given in the same manner as is provided in section two of this chapter, which notice shall statè the time of filing such report, and upon what day application will be made for the confirmation of such report, at which time all persons interested may appear and contest the confirmation thereof, or that the same ought to be modified in any particular, and may offer any competent evidence in support thereof.

§ 14. If upon the hearing the court shall be of opinion that the objections are not well taken, or if no objection shall be made, it shall order the confirmation thereof. If it shall appear that the same ought to be modified, and the court shall be sufficiently informed in the premises, it shall modify the same to conform to the equities in the premises; or if not sufficiently informed it shall order the commissioners to review and correct their report, and may make specific directions in what respect they shall reform their report. And the court may make all necessary orders in the premises, either for the continuance of the hearing or other lawful purpose.

§ 15. If the report is referred back to the commissioners for amendment, the court may fix a day when the commissioners shall again present their report, in which case the hearing shall stand adjourned to that day, and no further notice shall be required thereof. If no day shall be fixed for such report, the cause shall be continued to the next term of court, when it shall stand for hearing.

§ 16. When the report of the commissioners shall be confirmed, the court may impannel a jury of twelve men competent to serve as jurors, who shall be sworn to faithfully and impartially perform the duties required of them to the best of their understanding and judgment, and to make their assessment of damages and benefits according to law; or the court may direct that a jury be impanneled before a justice of the peace, for the assessment of damages and benefits, in which case the commissioners may apply to any justice of the peace in the county, who shall immediately, without the formality of any written application, proceed to summons and impannel a jury of six men competent to serve as jurors, who shall be sworn in the same manner as is above provided in case of a jury impanneled by the court in which the proceeding is pending, and the justice shall enter upon his docket a minute of such proceeding before him, and the name of the jurors.

§ 17. In either case the jurors shall elect one of their number as foreman, and shall proceed to examine the land to be affected by the proposed work, and ascertain, to the best of their ability and judgment, the damages and benefits which will be sustained by, or will accrue to, the land so affected by the construction of the proposed work, and shall make out an assessment roll, in which shall be set down in proper columns the names of owners, when known, a description of the premises affected, in words or figures, or both, as shall be most convenient; the number of acres in each tract, and if damages are allowed, the amount of the same; and if benefits are assessed, the amount of the same; and in case damages are allowed to and benefits assessed against the same tract of land, the balance, if any, shall be carried forward to a separate column for damages or benefits, as the case may be.

§ 18. In making such assessment the jury shall award and assess the damages and benefits in favor of and against each tract separately, in the proportion in which such tract of land will be damaged or benefited; and in no case shall any tract of land be assessed for benefits in a greater amount than its proportionate share of the estimated cost of the work and expenses of the proceeding, nor in a greater amount than it will be benefited by the proposed work, according to the best judgment of the jury.

§·19. Whenever it shall appear to the jury that a drain, ditch, levee or other work has been, in whole or in part, constructed for the purpose of draining any land to be affected by the work proposed under this chapter, and such work shall be found to be a benefit to such lands, and any of the lands to be benefited have borne any part of the expense of such work, either pursuant to an assessment or otherwise, the jury may allow to the owner of such land, and deduct from the assessment which they may make against the same, the amount of the expense of such work so borne by such lands, or such part thereof as will make an equality of burdens and benefits, as between the several owners of land benefited.

§ 20. When the jury shall have completed their assessment of damages and benefits, they shall fix a time and place when and where they will attend, in case the jury was impanneled by the court in which the petition is filed, before some justice of the peace in the county where some part of the land affected is situated; or if the jury was impanneled by a justice of the peace, before the same justice, for the correction of their assessment; and the commissioners or the jury shall give at least ten days' notice of such time and place, by posting notices as required in section two of this chapter, and by causing a copy of such notice to be sent by mail, addressed to each owner or occupant of land allowed for damages or assessed for benefits, whose name and residence is known to the commissioners. The affidavit of any credible person that he deposited such notice in the post office, addressed to the owner or occupant named, at his place of residence, postage paid, shall be sufficient evidence of the sending of such copy of notice pursuant to this section.

§ 21. The jury shall appear at the time and place appointed, and shall hear all objections that may then and there be made by the owners or occupants of any lands which may be allowed damages or assessed for benefits, or by the commissioners, to the allowance of damages to or assessment of benefits against any tract of land, and shall make such corrections as shall seem to them just, and shall adjust such assessment so as to make the same just and equitable.

§ 22. At such hearing the justice of the peace shall preside, and may compel the attendance of witnesses and enforce order in the same manner as in other cases before justices of the peace; and in case any juror impanneled shall fail to appear, may attach him for contempt, or may impannel another in his stead, and may, at any time during the proceedings in making or considering their assessment, impannel jurors in the place of any who shall refuse or fail to act, and administer to such jurors the oath required by the sixteenth section of this chapter.

§ 23. If no objection shall be made to the assessment at the time and place so appointed to hear objections, or when found correct, or corrected upon the hearing, the jury shall confirm such assessment, which shall be certified by the foreman of the jury and delivered to the commissioners, who shall return the same to the next term of the court in which the petition shall have been filed, and the same shall stand for hearing at that term, or may, for good cause, be continued.

§ 24. The commissioners, or any person who shall have made objections to such assessment, may appeal from the finding of the jury to the court in which the assessment is returned, by giving notice of his or their intention to take such appeal, within ten days after such confirmation by the jury, and filing with the clerk of such court his or their bond, payable to the opposite party, with such security and in such an amount as shall be approved by the clerk, conditioned to pay all costs that may accrue by reason of such appeal, and if the appeal is

§ 67. When such private road or cartway is proposed to pass over inclosed lands, the owners of such lands shall have a reasonable time, not exceeding eight months, to be designated by the commissioners of highways, to harvest crops and remove fences which may be on such land, before such road or cartway shall be opened.

§ 68. The commissioners of highways may, in their discretion, pay persons who live on or have private roads, which are used by the public, for work done on such roads; but in no case shall they be allowed more than the amount of their road tax for the year in which the work is done.

§ 69. Public roads may be established, altered, widened or vacated on township or county lines, in the same manner as other public roads, except that in such case a copy of the petition shall be posted up in and presented to the commissioners of highways of each town or road district interested; whereupon it shall be the duty of the commissioners of highways of the several towns or districts to meet and act as one body, in the same time and manner as in other cases, in considering the petition, viewing the premises, adjusting damages and making all orders in reference to such proposed road, alteration, widening or vacation, and a majority of all such commissioners must concur in all such orders; and a copy of all final orders and plats and papers shall be filed and recorded in each of the counties, towns, or road districts interested. They shall also, in case a new road is established, allot to each of such towns or districts, the part of such road which such town or district shall open and keep in repair, and the part so allotted shall be considered as wholly belonging to such town or district. They shall also divide the expenses and damages which may accrue from such location, widening or alteration, and if they cannot agree they shall refer the matter to three disinterested freeholders, as arbitrators, whose decision shall be final.

§ 70. Any person or persons interested in the decision of the commissioners of highways, in determining to, or in refusing to lay out, alter, widen or vacate any road, or revoking any previous order or decision relative to any road, may appeal from such decision to three supervisors of the county outside of the town in which such road or proposed road is located, by giving a written notice of such appeal to the said commissioners of highways, and to at least three of the petitioners, and also, to the same parties, a notice when and where such appeal will be tried, at least three days before such trial, within ten days after such decision has been filed in the office of the proper clerk, and shall also present a written petition to some justice of the peace of tum per annum from the time they shall become payable till they are paid, and such interest may be collected and enforced as part of the assessment.

§ 31. When the commissioners shall have elected to collect any assessment or installment thereof, themselves, or shall not have caused the same to be extended upon the state and county tax books, and any assessment or installment shall be due and uncollected, and as often as any installment shall become due and be uncollected at the time for making return of the tax books for the collection of state and county taxes next succeding the time of the receipt of the certified copy of the assessment by the commissioners, or the falling due of any installment, the commissioners may return a certified list of such delinquent lands, with the amount due thereon, to the officer who shall be authorized by law to receive the return of the books for the collection of state and county taxes in the counties or respective counties where the lands are situated, who shall proceed to collect and enforce the same, in the same manner as other taxes or special assessments are enforced, and shall pay over the amount so collected to the commissioner.

§ 32. If three months shall not intervene between the time of the delivery of an assessment warrant to the commissioners, or the falling due of the last of several installments upon any such warrant, and the time for making return of tax books for the collection of state and county taxes in that year, the commissioners may make their return at or before the time for making such returns in the succeeding year.

§ 33. The commissioners appointed by virtue of this chapter shall not collect or receive any money for the purposes therein specified, until they shall have given bond, payable to the People of the State of Illinois, for the use of all persons interested, in a sum not less than twice the amount of the assessment for benefits, payable in any one year, with such security as shall be approved by the judge of the court, conditioned for the faithful application of all moneys that may be received by them as such commissioners, and to make due account thereof to the court whenever required, which bond shall be filed in the court in which the proceedings are had. The court may require additional bond from time to time.

§ 34. The commissioners, when appointed and qualified pursuant to this chapter, may do any and all acts that may be necessary in and about the surveying, laying out, constructing, repairing, altering, enlarging, cleaning, protecting and maintaining any drain, ditch, levee or other work for which they shall have been appointed, including all necessary bridges, crossings, embankments, protections, dams and side drains, and may employ all necessary agents and servants, and enter into all necessary contracts, and sue and be sued.

§ 35. The commissioners may borrow money, not exceeding in amount the amount of assessment unpaid at the time of borrowing, for the construction of any work which they shall be authorized to construct, and may secure the same by notes or bonds, bearing interest at a rate not exceeding ten per cent. per annum, and not running beyond one year after the last assessment, on account of which the money is borrowed, shall fall due, which notes or bonds shall not be held to make the commissioners personally liable for the money borrowed, but shall constitute a lien upon the assessment for the repayment of the principal and interest thereof.

§ 36. When it shall appear that a drain, ditch, levee or other work has been, in whole or in part, constructed for the purposes of draining any land to be benefited by the construction of any work which they shall be authorized to construct, and the whole or any part of the cost of such work shall have been paid or incurred by any person or corporation, if such work shall be valuable for the purposes of draining the land, and can be made useful therefor by such commissioners, according to their plans, they may allow and pay to such person or corporation the actual value thereof for such purpose.

§ 37. All damages over and above the benefits to any tract of land shall be payable out of the amounts assessed against other lands for benefits, and shall be paid or tendered to the owner thereof, before the commissioners shall be authorized to enter upon his land for the construction of any work thereon. In case the owner is unknown, or there shall be a contest in regard to the ownership of the land, or the commissioners cannot for any reason safely pay the same to the owner, they may deposit the same with the clerk of the court, and the court may order the payment thereof to such party as shall appear to be entitled to the same.

§ 38. The court may, at any time, remove any commissioner appointed by it, and appoint another in his place, and may fill all vacancies by death, resignation, removal, or otherwise, and may appoint a new commission, or authorize the commissioners appointed to repair or cleanse any work, ditch or drain that shall have been constructed.

§ 39. Any one or more new assessments may be made in the manner hereinbefore provided, on the suggestion of the commissioners, or any owner or occupant of lands affected by any work authorized by this chapter, either to supply any deficiency in any other assessment, or to repair, alter, enlarge, cleanse, protect, or maintain any drain, ditch, levee or other work constructed by virtue of this chapter.

§ 40. The commissioners shall receive for their services the sum of three dollars per day for each day they shall be actually engaged in the business of their appointment. They shall fix the compensation of all other servants and agents.

§ 41. The commissioners shall, as often as once in each year after their appointment, and as much oftener as the court shall require, make a report to the court by which they were appointed, showing the amount of money by them collected, and the amount and kind of work done, and the manner in which the same is being done.

§ 42. When the cost of any proposed drain, ditch, levee or other work authorized by this chapter to be done will not exceed the sum of five thousand dollars, and will not extend through or into more than three congressional townships, the petition may, if the petitioners shall so elect, be filed with a justice of the peace in the county where the land to be affected, or the major part thereof, is situated; and all the proceedings authorized by this chapter to be had in the county court, in cases where the petition is filed in such court, may be had before such justice of the peace, and the assessment of damages and benefits shall be conducted before such justice in the same manner, as near as may be, as in cases commenced by petition before such county court. And appeals may be taken from the final judgment of the justice of the peace to the county court, within the same time and in the same manner as appeals may be taken from the findings of the jury in cases commenced in the county court; and the assessment of benefits may be collected and enforced as in such cases before the county court.

§ 43. When the proceedings shall be had before a justice of the peace, the justice shall direct the commissioners of highways of the town or township—or in case the drain, ditch or other work shall be located in several towns or townships, the commissioners of the several townships, as a joint board—to lay out and construct such work, and perform the duties required of commissioners appointed under this chapter; and such commissioners of highways shall have all the power and authority, and may perform all acts and shall discharge all the duties, bestowed upon or required of commissioners appointed by the county court.

§ 44. If any commissioner of highways shall refuse or neglect to discharge any of the duties imposed upon him by virtue of this chapter, he shall, for every such refusal or neglect, be liable to any party aggrieved for all damages sustained by him, and upon conviction may be fined in any sum not exceeding one hundred dollars, and be removed from his office.

§ 45. Any person who shall wrongfully and purposely fill up, cut, injure, destroy, or in any manner impair the usefulness of any drain, ditch or other work constructed under this chapter, or that may have been heretofore constructed, for the purposes of drainage or protection against overflow, may be fined in any sum not exceeding two hundred dollars, to be recovered before a justice of the peace in the proper county, or if the injury be to any levee, whereby lands shall be overflowed, he may, on conviction in any court of competent jurisdiction, be fined in any sum not exceeding five thousand dollars, or imprisoned in the county jail not exceeding one year, or both, in the discretion of the court. All complaints under this section shall be in the name of the People of the State of Illinois, and all fines, when collected, shall be paid over to the proper commissioners, to be used for the work so injured.

§ 46. In addition to the penalties provided in the preceding section, the person so wrongfully and purposely filling up, cutting, injuring destroying or impairing the usefulness of any such drain, ditch, levee or other work, shall be liable to the commissioners having charge thereof for all damages occasioned to such work, and to the owners and occupants of land for all damages that may result to them by such wrongful act, which may be recovered before a justice of the peace, if within his jurisdiction, or before any court of competent jurisdiction.

APPROVED April 24, 1871.

DROVERS.

AN ACT concerning drovers.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That whenever any drover or other person engaged in driving horses, cattle, mules, hogs or sheep through any part of the state of Illinois, shall drive off, or shall knowingly and willingly suffer or permit to be driven off from the premises of any citizen of said state, or from the range in which the stock of any such citizen usually run, to any distance, exceeding five miles from such premises or range, any horse, mule, neat cattle, hogs or sheep, belonging to such citizen, it shall be lawful for the owner of any such stock so driven off, to follow and reclaim the same wherever it may be found; and for the taking and driving away, or suffering or permitting to be driven away, of such stock, the said owner shall be entitled to recover of and from said drover or other person guilty thereof, for each horse, mule, neat cattle, hog or sheep, so driven away, twice the value thereof, to be recovered in an action of debt before any justice of the peace of any county where such horses or other stock may be found, or any court having competent jurisdiction thereof: *Provided, however*, that if the drover shall not pass any habitation within said five miles, and shall separate said cattle or other stock from the drove at the next habitation, in such case, said action shall not accrue to the owner of the said property.

§ 2. In any action commenced under the preceding section, a *capias* may issue against the defendant or defendants, upon the plaintiff stating, on oath, that he believes some one or more of his cattle or other stock has been driven off by a drover, and that he believes the same to be of a certain value; to be indorsed on the writ; and the proceedings thereon shall be the same as in other actions commenced by *capias*: *Provided, however*, that no exception shall be taken to the form of the oath aforesaid.

§ 3. Whenever judgment shall be rendered against any person, under the provisions of this chapter, a *fieri facias* may issue thereon immediately, unless an appeal shall at once be perfected against the goods and chattels of any such defendant, without affidavit, as required in other cases.

§ 4. That whenever any drover or other person engaged in herding or driving any horses, cattle, sheep, mules or hogs, in any part of this state, shall permit any of the before named stock to remain with his drove for a longer period than two days and nights, at any one time, he shall be subject to the same penalties which are imposed in the first section of this chapter: *Provided*, that the penalties in relation to herding shall not apply, except in cases where the same are confined within inclosures.

§ 5. Any person or persons who shall ride or drive faster than a walk, into or through a herd of horses or other stock, which are being herded or driven, shall, on conviction before any justice of the peace having jurisdiction, pay a fine not less than three dollars nor more than twenty dollars for each offense, one-half to the informer, the balance to the common school fund of the township.

§ 6. The term "herd," as used in section five of this act, shall be taken to mean "five" or more.

§ 7. That chapter thirty-five, of the Revised Statutes of 1845, entitled "Drovers," and "An act to amend an act entitled 'an act to prevent the unlawful driving away of cattle and other stock by drovers and other persons,' approved February 3, 1841," approved February 27, 1845, and all other acts in conflict with this act, are hereby repealed.

Approved March 15, 1872.

EMINENT DOMAIN.

AN ACT to provide for the exercise of the right of eminent domain.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That private property shall not be taken or damaged for public use without just compensation, and that in all cases in which compensation is not made by the state in its corporate capacity, such compensation shall be ascertained by a jury, as hereinafter prescribed.

§ 2. That in all cases where the right to take private property for public use, without the owner's consent, or the right to construct or maintain any public road, railroad, plankroad, turnpike road, canal, or other public work or improvement, or which may damage property not actually taken, has been heretofore, or shall hereafter be conferred by general law or special charter upon any corporate or municipal authority, public body, officer or agent, person, commissioner or corporation, and the compensation to be paid for or in respect of the property sought to be appropriated or damaged for the purposes above mentioned, cannot be agreed upon by the parties interested, or in case the owner of the property is incapable of consenting, or his name or residence is unknown, or he is a non-resident of the state, it shall be lawful for the party authorized to take or damage the property so required, or to construct, operate and maintain any public road, railroad, plankroad, turnpike road, canal or other public work or improvement, to apply to the judge of the circuit or county court, either in vacation or term time, where the said property or any part thereof is situate, by filing with the clerk a petition, setting forth, by reference, his or their authority in the premises, the purpose for which said property is sought to be taken or damaged, a description of the property, the names of all persons interested therein as owners or otherwise, as appearing of record, if known, or if not known, stating that fact, and praying such judge to cause the compensation to be paid to the owner to be assessed. If the proceedings seek to affect the property of persons under guardianship, the guardians or conservators of persons having conservators, shall be made parties defendant, and if of married women, their husbands shall also be made parties. Persons interested, whose names are unknown, may be made parties defendant by the description of the unknown owners, but in all such cases an affidavit shall be filed by or on behalf of the petitioner, setting forth that the names of such persons are unknown. In cases where the property is sought to be taken or damaged by the state for the purpose of establishing, operating or maintaining any state house or state charitable or other state institutions or improvements, the petition shall be signed by the governor or such other person as he shall direct, or as shall be provided by law.

§ 3. If such petition be presented to a judge in vacation, the judge shall note thereon the day of presentation, and shall also note thereon the day when he will hear the same, and shall order the issuance of summons to each resident defendant, and the publication of notice as to each non-resident defendant, and the clerk of the court shall at once issue the summons and give the notices accordingly.

§ 4. Service of such summons and publication of such notice shall be made as in causes in chancery.

§ 5. Causes may be heard by such judges in vacation as well as in term time, but no cause shall be heard earlier than ten days after service upon defendant, or upon due publication against non-residents. Any number of separate parcels of property, situate in the same county, may be included in one petition, and the compensation for each shall be assessed separately, by the same or different juries, as the court or judge may direct. Amendments to the petition, or to any paper or record in the cause, may be permitted whenever necessary to a fair trial and final determination of the questions involved. Should it become necessary at any stage of the proceedings to bring a new party before the court or judge, the court or judge shall have the power to make such rule or order in relation thereto as may be deemed reasonable and proper; and shall also have power to make all necessary rules and orders for notice to parties of the pendency of the proceeding, and to issue all process necessary to the execution of orders and judgments as they may be entered.

§ 6. In cases fixed for hearing of petition in vacation, it shall be the duty of the clerk of the court in whose office the petition is filed, at the time of issuing summons or making publication, to write the names of each of sixty-four disinterested freeholders of the county on sixty-four slips of paper, and, in presence of two disinterested freeholders, cause to be selected from said sixty-four names twelve of said persons to serve as jurors—such selection to be made by lot and without choice or discrimination; and the said clerk shall thereupon issue *venire*, directed to the sheriff of his county, commanding him to summon the twelve persons so selected as jurors to appear at the court house in said county, at a time to be named in the *venire*.

§ 7. The petitioner, and every party interested in the ascertaining of compensation, shall have the same right of challenge of jurors as in other civil cases in the circuit courts. If the panel be not full by reason of non-attendance, or be exhausted by challenges, the judge hearing such petition shall designate by name the necessary number of persons, of proper qualification, and the clerk or justice shall issue another *venire*, returnable instanter, and until the jury be full.

§ 8. When the jury shall have been so selected, the court shall cause the following oath to be administered to said jury:

You and each of you do solemnly swear that you will well and truly ascertain and report just compensation to the owner (and each owner) of the property which it is sought to take or damage in this case, and to each person therein interested, according to the facts in the case as the same may be made to appear by the evidence, and that you will truly report such compensation so ascertained: so help you God.

§ 9. Said jury shall, at the request of either party, go upon the land sought to be taken or damaged, in person, and examine the same, and after hearing the proof offered make their report in writing, and the same shall be subject to amendment by the jury, under the direction of the court or the judge, as the case may be, so as to clearly set forth and show the compensation ascertained to each person thereto entitled, and the said verdict shall thereupon be recorded: *Provided*, that no benefits or advantages which may accrue to lands or property affected shall be set off against or deducted from such compensation in any case.

§ 10. The judge or court shall, upon such report, proceed to adjudge and make such order as to right and justice shall pertain, ordering that petitioner enter upon such property and the use of the same, upon payment of full compensation, as ascertained as aforesaid; and such order, with evidence of such payment, shall constitute complete justification of the taking of such property.

§ 11. Any person not made a party may become such by filing his cross petition setting forth that he is the owner or has an interest in property, and which will be taken or damaged by the proposed work; and the rights of such last named petitioner shall thereupon be fully considered and determined.

§ 12. In all cases, in either the circuit or county court, or before a circuit or county judge, an appeal shall lie to the supreme court.

§ 13. In cases in which compensation shall be ascertained as aforesaid, if the party in whose favor the same is ascertained shall appeal such proceeding, the petitioner shall, notwithstanding, have the right to enter upon the use of the property upon entering into bond, with sufficient surety, payable to the party interested in such compensation, conditioned for the payment of such compensation as may be finally adjudged in the case, and in case of appeal by petitioner, petitioner shall enter into like bond with approved surety; said bonds shall be approved by the judge before whom such proceeding shall be had, and executed and filed within such time as shall be fixed by said judge.

§ 14. Payment of compensation adjudged may, in all cases, be made to the county treasurer, who shall, on demand, pay the same to the party thereto entitled, taking receipt therefor, or payment may be made to the party entitled, his, her or their conservator or guardian.

§ 15. The court or judge shall cause the verdict of the jury and the judgment of the court to be entered upon the records of said court.

§ 16. All laws and parts of laws in conflict with the provisions of this act are hereby repealed: *Provided*, that this act shall not be construed to repeal any law or part of law upon the same subject passed by this general assembly; but in all such cases this act shall be construed as providing a cumulative remedy.

Approved April 10, 1872.

FARMERS AND FRUIT GROWERS.

AN ACT for the protection of farmers, fruit growers, vine growers and gardeners.

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That every farmer, fruit and vine grower, and gardener, shall have an undisputed right to sell the produce of his farm, orchard, vineyard and garden in any place or market where such articles are usually sold, and in any quantity he may think proper, without paying any State, county or city tax, or license, for doing so, any law, city or town ordinance to the contrary notwithstanding: *Provided*, that the corporate authorities of any such city, town or village may prohibit the obstruction of its streets, alleys and public places for any such purpose: *And, provided, further*, that nothing in this act shall be so construed as to authorize the sale of spirituous, vinous or malt liquors, contrary to laws which now are or hereafter may be in force prohibiting the sale thereof.

APPROVED January 13, 1872.

WAREHOUSING AND INSPECTION OF GRAIN.

AN ACT to regulate public warehouses, and the warehousing and inspection of grain, and to give effect to article thirteen of the constitution of this State.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That public warehouses, as defined in article thirteen of the constitution of this State, shall be divided into three classes, to be designated as classes A, B and C, respectively.

§ 2. Public warehouses of class A shall embrace all warehouses, elevators or granaries in which grain is stored in bulk, and in which the grain of different owners is mixed together, or in which grain is stored in such a manner that the identity of different lots or parcels cannot be accurately preserved, such warehouses, elevators or granaries being located in cities having not less than one hundred thousand inhabitants. Public warehouses of class B shall embrace all other warehouses, elevators or granaries in which grain is stored in bulk, and in which the grain of different owners is mixed together. Public warehouses of class C shall embrace all other warehouses or places where property of any kind is stored for a consideration.

§ 3. The proprietor, lessee or manager of any public warehouse of class A shall be required, before transacting any business in such warehouse, to procure from the circuit court of the county in which such warehouse is situated, a license, permitting such proprietor, lessee or manager to transact business as a public warehouseman under the laws of this state, which license shall be issued by the clerk of said court upon a written application, which shall set forth the location and name of such warehouse, and the individual name of each person interested as owner or principal in the management of the same; or, if the warehouse be owned or managed by a corporation, the names of the president, secretary and treasurer of such corporation shall be stated; and the said license shall give authority to carry on and conduct the business of a public warehouse of class A in accordance with the laws of this state, and shall be revocable by the said court upon a summary proceeding before the court, upon complaint of any person in writing, setting forth the particular violation of law, and upon satisfactory proof, to be taken in such manner as may be directed by the court.

§ 4. The person receiving a license as herein provided, shall file with the clerk of the court granting the same, a bond to the People of the State of Illinois, with good and sufficient surety, to be approved by said court, in the penal sum of ten thousand dollars, conditioned for the faithful performance of his duty as a public warehouseman of class A, and his full and unreserved compliance with all laws of this State in relation thereto.

§ 5. Any person who shall transact the business of a public warehouse of class A without first procuring a license as herein provided, or who shall continue to transact any such business after such license has been revoked (save only that he may be permitted to deliver property previously stored in such warehouse), shall, on conviction, be fined in a sum not less than one hundred dollars nor more than five hundred dollars for each and every day such business is so carried on; and the court may refuse to renew any license, or grant a new one, to any of the persons whose license has been revoked, within one year from the time the same was revoked.

§ 6. It shall be the duty of every warehouseman of class A to receive for storage any grain that may be tendered to him, in the usual manner in which warehouses are accustomed to receive the same in the ordinary and usual course of business, not making any discrimination between persons desiring to avail themselves of warehouse facilities—such grain, in all cases, to be inspected and graded by a duly authorized inspector, and to be stored with grain of a similar grade received at the same time, as near as may be. In no case shall grain of different grades be mixed together while in store; but, if the owner or consignee so requests, and the warehouseman consent thereto, his grain of the same grade may be kept in a bin by itself, apart from that of other owners; which bin shall, thereupon, be marked and known as a "separate bin." If a warehouse receipt be issued for grain so kept separate, it shall state, on its face, that it is in a separate bin, and shall state the number of such bin; and no grain shall be delivered from such warehouses unless it be inspected on the delivery thereof by a duly authorized inspector of grain. Nothing in this section shall be so construed as to require the receipt of grain into any warehouse in which there is not sufficient room to accommodate or store it properly, or in cases where such warehouse is necessarily closed.

§ 7. Upon application of the owner or consignee of grain stored in a public warehouse of class A, the same being accompanied with evidence that all transportation or other charges which may be a lien upon such grain, including charges for inspection, have been paid, the warehouseman shall issue to the person entitled thereto, a warehouse receipt therefor, subject to the order of the owner or consignee, which receipt shall bear date corresponding with the receipt of grain into store, and shall state upon its face the quantity and inspected grade of the grain, and that the grain mentioned in it has been received into store, to be stored with grain of the same grade by inspection, received at about the date of the receipt, and that it is deliverable upon the return of the receipt, properly indorsed by the person to whose order it was issued, and the payment of proper charges for storage. All warehouse receipts for grain, issued from the same warehouse, shall be consecutively numbered; and no two receipts, bearing the same number, shall be issued from the same warehouse during any one year, except in a case of a lost or destroyed receipt, in which case the new receipt shall bear the same date and number as the original, and shall be plainly marked on its face "duplicate." If the grain was received from railroad cars, the number of each car shall be stated upon the receipt, with the amount it contained; if from canal boat or other vessel, the name of such craft; if from teams or by other means, the manner of its receipt shall be stated on its face.

§ 8. Upon the delivery of grain from store, upon any receipt, such receipt shall be plainly marked across its face with the word "canceled," with the name of the person canceling the same, and shall thereafter be void, and shall not again be put in circulation; nor shall grain be delivered twice upon the same receipt.

§ 9. No warehouse receipt shall be issued, except upon the actual delivery of grain into store, in the warehouse from which it purports to be issued, and which is to be represented by the receipt; nor shall any receipt be issued for a greater quantity of grain than was contained in the lot or parcel stated to have been received; nor shall more than one receipt be issued for the same lot of grain, except in cases where receipts for a part of a lot are desired, and then the aggregate receipts for a particular lot shall cover that lot and no more. In cases where a part of the grain represented by the receipt is delivered out of store and the remainder is left, a new receipt may be issued for such remainder; but such new receipt shall bear the same date as the original, and shall state on its face that it is balance of receipt of the original number; and the receipt upon which a part has been delivered shall be canceled in the same manner as if it had all been delivered. In case it be desirable to divide one receipt into two or more, or in case it be desirable to consolidate two or more receipts into one, and the warehouseman consent thereto, the original receipt shall be canceled the same as if the grain had been delivered from store; and the new receipts shall express on their face that they are parts of other receipts, or a consolidation of other receipts, as the case may be; and the numbers of the original receipts shall also appear upon the new ones issued, as explanatory of the change, but no consolidation of receipts of dates differing more than ten days shall be permitted, and all new receipts issued for old ones canceled, as herein provided, shall bear the same dates as those originally issued, as near as may be.

§ 10. No warehouseman in this State shall insert in any receipt issued by him, any language in anywise limiting or modifying his liabilities or responsibility, as imposed by the laws of this State.

§ 11. On the return of any warehouse receipt issued by him, properly indorsed, and the tender of all proper charges upon the property represented by it, such property shall be immediately deliverable to the holder of such receipt, and it shall not be subject to any further charges for storage, after demand for such delivery shall have been made. Unless the property represented by such receipt shall be delivered within two business hours after such demand shall have been made, the warehouseman in default shall be liable to the owner of such receipt for damages for such default, in the sum of one cent per bushel. and in addition thereto, one cent per bushel for each and every day of such neglect or refusal to deliver: *Provided*, no warehouseman shall be held to be in default in delivering if the property is delivered in the order demanded, and as rapidly as due diligence, care and prudence will justify.

§ 12. The warehouseman of every public warehouse of class A shall, on or before Tuesday morning of each week, cause to be made out, and shall keep posted up in the business office of his warehouse, in a conspicuous place, a statement of the amount of each kind and grade of grain in store in his warehouse at the close of business on the previous Saturday; and shall, also, on each Tuesday morning, render a similar statement, made under oath before some officer authorized by law to administer oaths, by one of the principal owners or operators thereof, or by the bookkeeper thereof, having personal knowledge of the facts, to the warehouse registrar appointed as hereinafter provided. They shall also be required to furnish daily, to the said registrar, a correct statement of the amount of each kind and grade of grain received in store in such warehouse on the previous day; also the amount of each kind and grade of grain delivered or shipped by such warehouseman during the previous day, and what warehouse receipts have been canceled, upon which the grain has been delivered on such day, giving the number of each receipt, and amount, kind and grade of grain received and shipped upon each; also, how much grain, if any, was so delivered or shipped, and the kind and grade of it, for which warehouse receipts had not been issued, and when and how such unreceipted grain was received by them; the aggregate of such reported cancellations and delivery of unreceipted grain, corresponding in amount, kind and grade with the amount so reported, delivered or shipped. They shall also, at the same time, report what receipts, if any, have been canceled and new ones issued in their stead, as herein provided for. And the warehouseman making such statements, shall, in addition, furnish the said registrar any further information, regarding receipts issued or canceled, that may be necessary to enable him to keep a full and correct record of all receipts issued and canceled, and of grain received and delivered.

§ 13. The grade of grain shall be as follows:

No. 1 white winter wheat shall be pure white winter wheat, sound, plump and well cleaned. No. 2 white winter wheat shall be pure white winter wheat, sound and reasonably clean. No. 1 red winter wheat shall be pure winter wheat, red or red and white mixed, sound, plump and well cleaned. No. 2 red winter wheat shall be pure winter wheat, red or red and white mixed, sound and reasonably clean. Amber, Nos. 1 and 2, shall include the lighter colored varieties of red wheat, quality and condition to be equal to the present standard of Nos. 1 and 2 red winter wheat. No. 3 winter wheat shall include winter wheat not clean and plump enough for No. 2, and weighing not less than fifty-five pounds. Rejected winter wheat shall include winter wheat damp, musty, or from any cause so badly damaged as to render it unfit for No. 3.

No. 1 spring wheat shall be plump and well cleaned. No. 2 spring wheat shall be sound, reasonably clean, and weighing not less than fifty-six pounds to the measured bushel. Hard spring wheat Nos. 1 and 2 shall include the hard varieties of spring wheat; quality and condition to be equal to the present standard of Nos. 1 and 2 spring wheat. No. 3 spring wheat shall be reasonably clean, not good enough for No. 2, weighing not less than fifty-four pounds. All spring wheat damp, musty, grown, badly bleached, or, from any other cause, unfit for No. 3, shall be graded as rejected. In case of mixture of spring and winter wheat, it shall be called spring wheat, and graded according to the quality thereof. Black sea and flinty fife wheat in no case shall be inspected higher than No. 2, and rice wheat no higher than rejected.

White corn shall be white, and in all other respects No. 1 corn. Yellow corn shall be yellow, and in all other respects be No. 1 corn. No. 1 corn shall be sound, dry, plump, and well cleaned white and [or] yellow. No. 2 corn shall be dry, reasonably clean, but not plump enough for No. 1. All damp, dirty, or otherwise badly damaged corn shall be graded as rejected. No. 2 kiln-dried corn shall be sound, plump, and well cleaned white or yellow corn. All kiln-dried corn not good enough for No. 2 kiln-dried, shall be graded as rejected kiln-dried corn.

No. 1 oats shall be white, sound, clean and reasonably free from other grain. No. 2 oats shall be sound, reasonably clean, and reasonably free from other grain. Rejected oats shall include such as are damp, unsound, dirty, or from any cause unfit for No. 2.

No. 1 rye shall be sound, plump, and well cleaned. No. 2 rye shall be sound, reasonably clean, and reasonably free from other grain. All rye which is damp, musty, dirty, or which is from any other cause unfit for No. 2 rye, shall be graded as rejected.

No. 1 barley shall be plump, bright, sound, clean, and free from other grain. No. 2 barley shall be reasonably clean and sound, but not bright or plump enough for No. 1, and reasonably free from other grain. No. 3 barley shall include shrunken or otherwise slightly damaged barley, not weighing less than forty-two pounds to the measured bushel. All barley which is damp, musty, or from any cause is badly damaged, or largely mixed with other grain, shall be graded as rejected.

All grain that is warm, or is in a heating condition, shall not be graded. In the inspection of grain, the weight shall not alone determine the grade. All inspectors shall make their reasons for grading grain, when necessary, fully known, by notations on their books. All wheat shall be weighed, and the weight entered on the inspector's book.

§ 14. It shall be the duty of the governor to appoint, by and with the advice and consent of the senate, a suitable person, who shall not be a member of the board of trade, and who shall not be interested, either directly or indirectly, in any warehouse in this State, a chief inspector of grain, who shall hold his office for the term of two years, unless sooner removed as hereinafter provided, for every city in which is located a warehouse of class A. It shall be the duty of such chief inspector of grain to have a general supervision of the inspection of grain, as required by this act or laws of this State, under the advice and immediate direction of the board of commissioners of railroads and warehouses. The said chief inspector shall be authorized to nominate to the commissioners of railroads and warehouses, such suitable persons, in sufficient numbers, as may be deemed qualified for assistant inspectors, who shall not be members of the board of trade, nor interested in any warehouse, and, also, such other employès as may be necessary to properly conduct the business of his office; and the said commissioners are authorized to make such appointments. The chief inspector shall, upon entering upon the duties of his office, be required to take an oath as in other cases of officers, and he shall execute a bond to the People of the State of Illinois, in the penal sum of fifty thousand dollars, with sureties, to be approved by the board of commissioners of railroads and warehouses, with a condition therein that he will faithfully and strictly discharge the duties of his said office of inspector, according to law and the rules and regulations prescribing his duties; and that he will pay all damages to any person or persons who may be injured by reason of his neglect, refusal or failure to comply with law and the rules and regulations aforesaid. And each assistant inspector shall take a like oath, execute a bond in the penal sum of five thousand dollars, with like conditions, and to be approved in like manner as is provided in case of the chief inspector—which said several bonds shall be filed in the office of said commissioners; and suit may be brought upon said bond or bonds in any court having jurisdiction thereof, in the county where the plaintiff or defendant resides, for the use of [the] person or persons injured. The chief inspector of grain, and all assistant inspectors of grain, and other employès in connection therewith, shall be governed in their respective duties by such rules and regulations as may be prescribed by the board of commissioners of railroads and warehouses; and the said board of commissioners shall have full power to make all proper rules and regulations from [for] the inspection of grain; and shall, also, have power to fix the rate of charges for the inspection of grain, and the manner in which the same shall be collected; which charges shall be regulated in such a manner as will, in the judgment of the commissioner, produce sufficient revenue to meet the necessary expenses of the service of inspection, and no more. It shall be the duty of the said board of commissioners to fix the amount of compensation to be paid to the chief inspector, assistant inspectors, and all other persons employed in the inspection service, and prescribe the time and manner of their payment. The said board of commissioners of railroads and warehouses are hereby authorized to appoint a suitable person as warehouse registrar, and such assistants as may be deemed necessary to perform the duties imposed upon such registrar by the provisions of this act. The said board of commissioners shall have and exercise a general supervision and control of such appointees; shall prescribe their respective duties; shall fix the amount of their compensation, and the time and manner of its payment. Upon the complaint, in writing, of any person, to the said board of commissioners, supported by reasonable and satisfactory proof, that any person appointed or employed under the provisions of this section has violated any of the rules prescribed for his government, has been guilty of any improper official act, or has been found inefficient or incompetent for the duties of his position, such person shall be immediately removed from his office or employment by the same authority that appointed him; and his place shall be filled, if necessary, by a new appointment, or in case it shall be deemed necessary to reduce the number of persons so appointed or employed, their term of service shall cease under the orders of the same authority by which they were appointed or employed. All necessary expenses incident to the inspection of grain, and to the office of registrar, economically administered, including the rent of suitable offices, shall be deemed expenses of the inspection service, and shall be included in the estimate of expenses of such inspection service, and shall be paid from the funds collected for the same.

§ 15. Every warehouseman of public warehouses of class A shall be required, during the first week in January of each year, to publish in one or more of the newspapers (daily, if there be such,) published in the city in which such warehouse is situated, a table or schedule of rates for the storage of grain in his warehouse during the ensuing year, which rates shall not be increased (except as provided for in section sixteen of this act) during the year; and such published rates, or any published reduction of them, shall apply to all grain received into such warehouse from any person or source, and no discrimination shall be made, directly or indirectly, for or against any charges made by such warehouseman for the storage of grain. The maximum charge for storage and handling of grain, including the cost of receiving and delivering, shall be, for the first thirty days, or part thereof, two cents per bushel, and for each fifteen days, or part thereof, after the first thirty days, one-half of one cent per bushel: *Provided*, *however*, that grain damp or liable to early damage, as indicated by its inspection when received, may be subject to two cents per bushel storage for the first ten days, and for each additional five days, or part thereof, not exceeding one-half of one cent per bushel.

§ 16. No public warehouseman shall be held responsible for any loss or damage to property by fire, while in his custody, provided reasonable care and vigilance be exercised to protect and preserve the same; nor shall he be held liable for damage to grain by heating, if it can be shown that he has exercised proper care in handling and storing the same, and that such heating or damage was the result of causes beyond his control; and, in order that no injustice may result to the holder of grain in any public warehouse of classes A or B, it shall be deemed the duty of such warehouseman to dispose of, by delivery or shipping, in the ordinary and legal manner of so delivering, that grain of any particular grade which was first received by them, or which has been for the longest time in store in his warehouse; and, unless public notice has been given that some portion of the grain in his warehouse is out of condition or becoming so, such warehouseman shall deliver grain of quality equal to that received by him, on all receipts as presented. In case, however, any warehouseman of classes A or B shall discover that any portion of the grain in his warehouse is out of condition or becoming so, and it is not in his power to preserve the same, he shall immediately give public notice, by advertisement in a daily newspaper in the city in which such warehouse is situated, and by posting a notice in the most public place (for such a purpose) in such city, of its actual condition, as near as he can ascertain it; shall state in such notice the kind and grade of the grain, and the bins in which it is stored; and shall also state in such notice the receipts outstanding upon which such grain will be delivered, giving the numbers, amounts and dates of each—which receipts shall be those of the oldest dates then in circulation or uncanceled, the grain represented by which has not previously been declared or receipted for as out of condition, or if the grain longest in store has not been receipted for, he shall so state, and shall give the name of the party for whom such grain was stored, the date it was received, and the amount of it; and the enumeration of receipts and identification of grain so discredited, shall embrace, as near as may be, as great a quantity of grain as is contained in such bins, and such grain shall be delivered upon the return and cancellation of the receipts and the unreceipted grain, upon the request of the owner or person in charge thereof. Nothing herein contained shall be held to relieve the said warehouseman from exercising proper care and vigilance in preserving such grain after such publication of its condition; but such grain shall be kept separate and apart from all direct contact with other grain, and shall not be mixed with other grain while in store in such warehouse. Any warehouseman guilty of any act or neglect, the effect of which is to depreciate property stored in the warehouse under his control, shall be held responsible as at common law, or upon the bond of such warehouseman, and, in addition thereto, the license of such warehouseman, if his warehouse be of class A, shall be revoked. Nothing in this section shall be so construed as to permit any warehouseman to deliver any grain stored in a special bin, or by itself, as provided in this act, to any but the owner of the lot, whether the same be represented by a warehouse receipt or otherwise. In case the grain declared out of condition, as herein provided for, shall [not] be removed from store by the owner thereof within two months from the date of the notice of its being out of condition, it shall be lawful for the warehouseman where the grain is stored to sell the same at public auction, for account of said owner, by giving ten days' public notice, by advertisement in a newspaper (daily, if there be such,) published in the city or town where such warehouse is located.

§ 17. It shall not be lawful for any public warehouseman to mix any grain of different grades together, or to select different qualities of the same grade for the purpose of storing or delivering the same, nor shall he attempt to deliver grain of one grade for another, or in any way tamper with grain while in his possession or custody, with a view of securing any profit to himself or any other person; and in no case, even of grain stored in a separate bin, shall he be permitted to mix grain of different grades together while in store. He may, however, on request of the owner of any grain stored in a private bin, be permitted to dry, clean, or otherwise improve the condition or value of any such lot of grain; but in such case it shall only be delivered as such separate lot, or as the grade it was originally when received by him, without reference to the grade it may be as improved by such process of drying or cleaning. Nothing in this section, however, shall prevent any warehouseman from moving grain while within his warehouse for its preservation or safe keeping.

§ 18. All persons owning property, or who may be interested in the same, in any public warehouse, and all duly authorized inspectors of such property, shall at times, during ordinary business hours, be at full liberty to examine any and all property stored in any public warehouse in this State, and all proper facilities shall be extended to such person by the warehouseman, his agents and servants, for an examination; and all parts of public warehouses shall be free for the inspection and examination of any person interested in property stored therein, or of any authorized inspector of such property. And all scales used for the weighing of property in public warehouses shall be subject to examination and test by any duly authorized inspector or sealer of weights and measures, at any time when required by any person or persons, agent or agents, whose property has been or is to be weighed on such scales—the expense of such test by an inspector or sealer to be paid by the warehouse proprietor if the scales are found incorrect, but not otherwise. Any warehouseman who may be guilty of continuing to use scales found to be in an imperfect or incorrect condition by such examination and test, until the same shall have been pronounced correct and properly sealed, shall be liable to be proceeded against as hereinafter provided.

§ 19. In all places where there are legally appointed inspectors of grain, no proprietor or manager of a public warehouse of class B shall be permitted to receive any grain and mix the same with the grain of other owners, in the storage thereof, until the same shall have been inspected and graded by such inspector.

§ 20. Any person who shall assume to act as an inspector of grain, who has not first been so appointed and sworn, shall be held to be an impostor, and shall be punished by a fine of not less than fifty dollars, nor more than one hundred dollars for each and every attempt to so inspect grain, to be recovered before a justice of the peace. Any duly authorized inspector of grain who shall be guilty of neglect of duty, or who shall knowingly or carelessly inspect or grade any grain improperly, or who shall accept any money or other consideration, directly or indirectly, for any neglect of duty, or the improper performance of any duty as such inspector of grain; and any person who shall improperly influence any inspector of grain in the performance of his duties as such inspector, shall be deemed guilty of a misdemeanor, and, on conviction, shall be fined in a sum not less than one hundred [dollars,] nor more than one thousand dollars, in the discretion of the court, or shall be imprisoned in the county jail not less than three nor more than twelve months, or both, in the discretion of the court.

§ 21. In case any owner or consignee of grain shall be dissatisfied with the inspection of any lot of grain, or shall, from any cause, desire to receive his property without its passing into store, he shall be at liberty to have the same withheld from going into any public warehouse (whether the property may have previously been consigned to such warehouse or not), by giving notice to the person or corporation in whose possession it may be at the time of giving such notice; and such grain shall be withheld from going into store, and be delivered to him, subject only to such proper charges as may be a lien upon it prior to such notice. The grain, if in railroad cars, to be removed therefrom by such owner or consignee within twenty-four hours after such notice has been given to the railroad company having it in possession: *Provided*, such railroad company place the same in a proper and convenient place for unloading; and any person or corporation refusing to allow such owner or consignee to so receive his grain shall be deemed guilty of conversion, and shall be liable to pay such owner or consignee double the value of the property so converted. Notice that such grain is not to be delivered into store may also be given to the proprietor or manager of any warehouse into which it would otherwise have been delivered, and if, after such notice, it be taken into store in such warehouse, the proprietor or manager of such warehouse shall be liable to the owner of such grain for double its market value.

§ 22. It shall be unlawful for any proprietor, lessee or manager of any public warehouse, to enter into any contract, agreement, understanding, or combination, with any railroad company or other corporation, or with any individual or individuals, by which the property of any person is to be delivered to any public warehouse for storage or for any other purpose, contrary to the direction of the owner, his agent, or consignee. Any violation of this section shall subject the offender to be proceeded against as provided in section twenty-three of this act.

§ 23. If any warehouseman of class A shall be guilty of a violation of any of the provisions of this act, it shall be lawful for any person injured by such violation to bring suit in any court of competent jurisdiction, upon the bond of such warehouseman, in the name of the People of the State of Illinois, to the use of such person. In all criminal prosecutions against a warehouseman, for the violation of any of the provisions of this act, it shall be the duty of the prosecuting attorney of the county in which such prosecution is brought, to prosecute the same to a final issue, in the name of and on behalf of the People of the State of Illinois.

§ 24. Warehouse receipts for property stored in any class of public warehouses, as herein described, shall be transferable by the indorsement of the party to whose order such receipt may be issued, and such indorsement shall be deemed a valid transfer of the property represented by such receipt, and may be made either in blank or to the order of an other. All warehouse receipts for property stored in public warehouses of class C shall distinctly state on their face the brand or distinguishing marks upon such property.

§ 25. Any warehouseman of any public warehouse who shall be guilty of issuing any warehouse receipt for any property not actually in store at the time of issuing such receipt, or who shall be guilty of issuing any warehouse receipt in any respect fraudulent in its character, either as to its date or the quantity, quality, or inspected grade of such property, or who shall remove any property from store (except to preserve it from fire or other sudden danger), without the return and cancellation of any and all outstanding receipts that may have been issued to represent such property, shall, when convicted thereof, be deemed guilty of a crime, and shall suffer, in addition to any other penalties prescribed by this act, imprisonment in the penitentiary for not less than one, and not more than ten years.

§ 26. Nothing in this act shall deprive any person of any common law remedy now existing.

§ 27. All proprietors or managers of public warehouses shall keep posted up at all times, in a conspicuous place in their business offices, and in each of their warehouses, a printed copy of this act.

§ 28. All acts or parts of acts inconsistent with this act are hereby repealed.

APPROVED April 25, 1871.

ILLINOIS STATE SWINE BREEDERS' ASSOCIATION.

REPORT OF PROCEEDINGS SINCE ITS ORGANIZATION, AT DECATUR, SEPTEMBER, 1869, UP TO JANUARY, 1872, TOGETHER WITH CONSTITUTION, BY-LAWS, RULES, REGULATIONS, ETC.

A number of swine breeders, present at the State Fair, held a meeting at the office of "The Prairie Farmer," on the Fair Grounds, Decatur, on Wednesday evening, September, 1869, for the purpose of preliminary action toward the organization of an Illinois Swine Breeders' Association. Charles Snoad, Esq., of Will county, was chosen Chairman, and W. W. Corbett, Secretary. After some discussion as to the object of the convention, the meeting adjourned to Thursday evening. At the latter meeting the organization was perfected under the following constitution:

ARTICLE 1. The name of this organization shall be the "Illinois State Swine Breeders' Association."

ART. 2. The object of this Association shall be the improvement of the various breeds of swine and the promotion and protection of the interests of the breeders of swine in the State of Illinois.

ART. 3. The officers of this Association shall consist of a President, one Vice-President for each Congressional District, and one for the State-at-large, a Secretary, and a Treasurer. These to constitute an Executive Board.

ART. 4. It shall be the duty of the President to preside at all meetings and give the casting vote in case of a tie. In case of the absence of the President, the Board shall elect one of the Vice-Presidents, who shall be President *pro tem.*

ART. 5. The Secretary shall keep a record of all meetings of the Board, and shall be Corresponding Secretary of the Association.

ART. 6. The Treasurer shall hold all money belonging to the Association, and pay out the same on the order of the Secretary, provided the Secretary shall not draw orders on the Treasurer for any moneys until the bills be allowed by a Board of Auditors, which shall consist of the President, Secretary, and one Vice-President.

ART. 7. There shall be an annual meeting of the Board on the first Tuesday in January, at such place as may be hereafter designated. The President shall call special meetings of the Board whenever one-third of the Board shall, in writing, instruct him to do so.

Art. 8. All officers of this Association shall hold office one year, or until their successors are elected.

Art. 9. There shall be an election of officers held on the State Fair Grounds on the Wednesday evening of the Fair.

Art. 10. The Executive Board shall have power to fill all vacancies in the Board that may occur.

Art. 11. Any person may become a member of this Association on the payment of two dollars.

Art. 12. This constitution may be amended at any meeting held for the election of officers, by a majority of the members of the Association present.

Art. 13. A majority of the members present shall constitute a quorum to transact business.

Art. 14. This Association shall have the power to hold an annual Fair for the exhibition of the different breeds of Swine, at such time and place as a majority of the Executive Board may direct.

The following officers were elected for the ensuing year:

President	Thomas J. Crowder	Springfield
Vice-President—1st District	W. W. Corbett	Chicago
‘‘ —2d ‘‘	A. J. Lovell	De Kalb
‘‘ —3d ‘‘	N. F. Sammis	Polo
‘‘ —4th ‘‘	Adam Rankin	Monmouth
‘‘ —5th ‘‘	E. P. Sisson	Galesburg
‘‘ —6th ‘‘	Frank Searles	Joliet
‘‘ —7th ‘‘	A. M. Fauley	Urbana
‘‘ —8th ‘‘	Henry Funk	Bloomington
‘‘ —9th ‘‘	J. R. Hinkel	Macomb
‘‘ —10th ‘‘	E. P. Jones	Jacksonville
‘‘ —11th ‘‘	Uriah Mills	Salem
‘‘ —13th ‘‘	W. H. Green	Cairo
‘‘ —At large	Charles Snoad	Joliet
Secretary	Charles Snoad	Joliet
Treasurer	Wm. Langston	Springfield

At an adjourned meeting of this Association, at the same place, it was

Resolved, 1st. That the breeders or exhibiters of swine at our annual State Fair, respectfully request the officers of our State Society to provide suitable buildings, conveniently arranged, covered and floored.

2d. That, in our opinion, the premiums now offered for the encouragement of the improvement of swine are not in proportion to those offered for other classes of stock.

3d. That good care and judgment should be exercised in the selection of judges, and that none but competent persons should be selected.

4th. That stock, as now exhibited in many instances, being over-fed and unnecessarily fat, is an injury to the exhibiter, and its tendency is to destroy the breeding qualities of many of our finest breeding animals.

On motion, the chair appointed a committee of three, consisting of Charles Snoad, Henry Funk, and — Perkins, for the purpose of arranging for an exhibition at such time and place as may be deemed advisable, and report at the January meeting of the Association.

On motion, the meeting adjourned.

The following is a list of persons who became members of this Association at this meeting:

F. Searles, Hadley; Adam Rankin, Monmouth; Henry Funk, Bloomington; Isaiah Dillon, Normal; Samuel E. Arnold, Clinton; T. R. Hinkel, Bushnell; Edmund Terrill, Clayton; J. I. Wallace, Clayton; E. G. Franklinberg, Towanda; Thomas J. Crowder, Springfield; Charles Snoad, Joliet; I. M. Gillett, Hadley; Landon Mapes, Jacksonville.

The first Winter meeting of the Association was held at Springfield, on the first Tuesday in January, 1870. All persons interested in swine breeding or pork raising were earnestly invited to be present.

Any one desiring to become a member of the Association, was invited to do so by forwarding two dollars to the Treasurer.

FIRST ANNUAL WINTER MEETING—1870.

The first annual meeting of this Association was held at the common council room, in the city of Springfield, on Tuesday and Wednesday, January 3d and 4th, A. D. 1870.

The meeting was called to order by President T. J. Crowder, who briefly stated the object of the meeting.

The following is a list of members present, with the residence and breed of swine to which each pays especial attention:

Ira Searles	Marengo	Berkshire
W. S. Manon	Decatur	“
T. J. Crowder	Springfield	“
Wm. Langston	Springfield	“
P. M. Minier	Jacksonville	“
Adam Rankin	Monmouth	“
John M. Work	Bardolph	“
W. G. McCulloch	Flora	“
John McFee	Bloomington	“
Andrew Lovell	Sycamore	Chester White
T. H. Crowder	Marrowbone	“
J. G. Taylor	Decatur	“
Charles Snoad	Joliet	Chester White, Suffolk, Berkshire
Landon Mapes	Jacksonville	“
F. Searles	Hadley	“
E. P. Jones	Jacksonville	Morgan County White
I. M. Gillett	Hadley	Suffolk
O. & W. Wallace	Clayton	Magie

John Swaney	Magnolia	Magie	
Geo. F. Wells	Winchester	"	
Henry Funk	Bloomington	"	
W. P. Sisson	Galesburg	"	
Isaiah Dillon	Bloomington	"	
Samuel C. Arnold		"	
T. R. Hinkel	Bushnell	"	
E. G. Frankeberg	Towanda	"	
E. Terrill	Clayton	"	
W. P. Brooks	Auburn	"	

On motion of Mr. Funk, the President appointed a committee of three, consisting of Mr. Funk, of Bloomington, Mr. Sisson, of Galesburg, and Mr. Lovell, of DeKalb, to report a programme of business for the consideration of the meeting.

On motion of Mr. Funk, the President and Secretary were added to the committee.

On motion, meeting adjourned until 2½ o'clock P. M.

AFTERNOON SESSION.

The Association met at 2½ o'clock P. M., pursuant to adjournment, Mr. Crowder in the chair.

The committee for preparing a programme of business for the meeting, asked for further time.

On motion, the time was extended until evening.

The committee also suggested that a committee of three be appointed to revise the State Fair premium list, and present the same for the consideration of the Executive Board of the State Agricultural Society.

On motion of Mr. Manon, the suggestion of the committee was adopted.

The chair appointed Messrs. Manon, Wallace and Funk said committee.

On motion, the meeting resolved itself into a committee of the whole.

The following remarks were presented by Mr. Henry Funk, of Bloomington:

Mr. Funk said, the object of this meeting was to discuss the interest and importance of swine breeding and pork raising in our State. From facts before us, it appeared that its importance had never been fully appreciated by our State Agricultural Society, or by the masses of our farmers. The deficient provisions in the swine department at the fair grounds at Decatur last fall, and the small premiums offered for swine, were evidences of the former; and the poor and ill-bred lots of hogs offered at present at the Chicago Stock Yards, was sufficient evidence of the latter. But it was nevertheless true that pork raising stood pre-eminent as a branch of stock raising in our State. The wealthy farmer might keep fine herds of cattle and thorough-bred horses, but they were out of the reach of the masses and out of the reach of the poor. It was the pig which was the stock for the people and within the reach of every one. A man might be too poor to purchase or keep a cow, but he could keep a pig. It was the pig that furnishes the chief subsistence to every family in almost every land. He had said that pork raising stood pre-eminent as a branch of stock raising in our State. If we looked at it in a pecuniary respect, it was far more remunerative than the raising of any other kind of stock, for swine have all the advantages of other stock. They can be bought for comparatively little money; they multiply faster; they give quicker returns; they make more food for the amount of food consumed than other domesticated animals, and when in condition for market, can be sold more readily than any other kind of stock. Considering the money invested in the pork trade in this State, its magnitude far excels that of any other. Little as pork raising and its importance was understood, yet, from the presence of these facts, he ventured to say that swine are the chief supporters of the poor, the prosperity of the masses, and the wealth of our State.

After a discussion of various subjects in connection with the interests of the Association, the meeting adjourned until 7½ o'clock P. M.

EVENING SESSION.

The Association met at 7½ o'clock P. M., pursuant to adjournment.

The committee appointed to report the order of business, made the following report:

Your committee, appointed to report the order of business, respectfully report that in their judgment the matters claiming attention are—

1st. The revision of the State Fair premium list, together with such arrangements as may be necessary for the proper exhibition of swine at our State Fair.

2d. Consider the propriety and practicability of holding a Swine Fair in the city of Chicago during the fall of 1870, providing the pork packers and citizens of said city shall offer sufficient inducements.

3d. The appointment of a committee, whose duty it shall be to procure statistics in regard to the comparative value of the hog product.

4th. What are the best modes of feeding breeding animals as well as for making pork.

5th. What rules should be observed in successful breeding.

6th. What is the cause and how can we prevent disease among hogs.

7th. What buildings are required for the successful keeping and raising of swine.

On motion, the report of the committee was adopted.

The Committee on revision of the Premium List made the following report, and after quite a lengthy discussion of the different items, it was adopted, as follows, to-wit:

Best boar, 2 years old and over	$20 00
Second premium	15 00
Best boar, 1 year old and under 2	20 00
Second premium	15 00
Best boar, 6 months old and under 1 year	15 00
Second premium	10 00
Best boar, under 6 months	10 00
Second premium	5 00
Sows same as boars.	
Sow with litter of pigs, not less than 5, and under 4 months old	25 00
Second premium	15 00
Sweepstakes:	
Best boar and 3 sows, any age or breed	50 00
Best boar, any age or breed	25 00
Best sow, any age or breed	25 00
Classes same as last year.	

On motion, the meeting adjourned until 9 o'clock A. M., of Wednesday.

SECOND DAY—FIRST WINTER MEETING.

The Association met at nine o'clock A. M., pursuant to adjournment.

On motion of Mr. Wallace, the breed of hogs known as the Poland and China or Magie, shall hereafter be known as the Magie hog.

Mr. Sisson moved to amend by adding the name Poland-China or Magie. Lost.

Moved by Mr. Jones that a class be added to the premium list for the Morgan County Whites. Lost.

On motion of Mr. W. P. Sisson, the Committee on Premium List were instructed to present the corrected report to the State Agricultural Board, with the addition of the President and Secretary as members of said committee.

On motion, meeting adjourned until half-past one o'clock P. M.

AFTERNOON SESSION.

The Association met pursuant to adjournment.

The minutes of the previous meetings were read and accepted.

Reports of committees being in order, the following report was made by Committee on Exhibition:

Your committee appointed at the last meeting of this Association, held at Decatur, for the purpose of taking into consideration the propriety of holding an exhibition of swine during the fall of 1870, respectfully submit the following report:

That said committee visited Chicago for the purpose of learning what encouragement would be likely to be given to such an undertaking. Colonel Kreigh, President of the Pork-Packers' Association, Col. John Hancock and others were consulted upon the subject, and appeared to favor the movement, and agreed to call a special meeting of the pork-packers for the purpose of taking into consideration the propriety of holding out inducements for the founding of such an enterprise. Up to this time nothing has been done to favor the movement. Your committee respectfully ask to be discharged, and that the subject be referred to the Executive Board of this Association.

CHAS. SNOAD,
HENRY FUNK,
JESSE PERKINS,
Committee.

On motion, the report was adopted and committee discharged.

It was moved by Mr. Jones that this Association recognize the Insane Hospital hog under the name of the "Morgan County Whites." Carried.

On motion of Mr. Sisson, it was

Resolved, That all aged animals exhibited at our fairs should be actual producers.

On motion of Mr. Minier, the President appointed a committee of three on statistics, consisting of Charles Snoad, Adam Rankin and P. N. Minier.

On motion, Mr. W. R. Duncan was invited to address the meeting, the substance of which we give below.

Mr. Duncan said, in answer as to what kind of a hog he would breed, that he would breed different kinds under different circumstances. If he intended them to follow cattle, would select the best gleaners. If making hog raising a specialty, he would breed those that would make the most pork for the least feed; that the hog should always be allowed good shelter, comfortable quarters and pure air, connected with plenty of exercise, this being essential to the health of the animal. Recommended cooking food for hogs, and grinding where convenient. If thoroughly cooked would answer all purposes, grinding being more expensive. All food should be cooked until it was soft and could be readily mashed with the fingers. Have a steamer that will steam twenty bushels at once, or sixty bushels per day. Would recommend the use of lime, sulphur and salt, to prevent disease.

Mr. W. P. Sisson, of Galesburg, said he was feeding from 100 to 300 hogs upon cooked feed; found it to be a saving of from twenty-five to fifty per cent. over the ordinary modes of feed. He used coal, salt and sulphur as a preventive of disease.

REPORT OF COMMITTEE ON REVISION OF PREMIUM LIST.

To the officers of the State Agricultural Society:

A committee having been appointed for the purpose of considering the propriety of revising or offering a premium list to be adopted by your honorable body, very respectfully suggest that you adopt the following list (the same as stated above) of premiums to be offered at the next annual fair of your Society; would also earnestly invite your attention to the necessity of affording more suitable buildings, with floored pens for the accommodation of the exhibiters in this department, and if you may deem it advisable, that each person intending to become an exhibiter shall make known to the superintendent of this department the number of pens required for his use and the number of hogs he intends to exhibit, as nearly as possible, at least twenty days before the fair. Would respectfully suggest that you take into consideration the importance of the hog products of our State. That the revenue from this department of agriculture is far greater than any other That more speedy and ample returns are afforded from the raising of this class of stock than from either cattle, horses or sheep, and that while you have offered thousands of dollars as premiums for these classes of stock, the hog has received less than $700. You are also aware of the much greater expense incurred in the handling of hogs at our fairs than either horses, cattle or sheep; while they are quietly led to their stalls, our hogs are necessarily required to be carted. Not wishing to interfere with any other department we would most respectfully ask that you may fairly and justly consider our petition.

O. WALLACE,
Chairman Committee.

On motion of Mr. Snoad,

Resolved, That the thanks of this Association are hereby tendered to the officers of the Chicago, Alton and St. Louis Railroad, for the reduction of fare to excursion rates to the members attending the Springfield meeting. That thanks be also extended to the Mayor and City Council of the city of Springfield for the use of the Common Council rooms, for the purpose of holding the meetings of this Association.

On motion of Mr. Minier, thanks were offered to Mr. Crowder, President of the Association, for the faithful and courteous discharge of his duties.

On motion, the meeting adjourned, subject to the call of the Executive Board.

THOS. J. CROWDER,
President.

CHARLES SNOAD,
Secretary.

In making the report of the first annual meeting of this Association, it might not be considered improper to state that a general interest appeared to be taken in the success of this enterprise; that more general information concerning the raising, breeding and feeding of this useful animal should be disseminated among the people. Although these questions were not as fully discussed as would have been desired, yet many important objects were attained, among which are the revision of the premiums to be offered at our State Fair, along with more suitable accommodations for the swine department; that a swine fair may be held, providing proper encouragement be given to forward the undertaking. A Committee on Statistics was appointed, whose duty will be to gather such information as shall be deemed practicable, for the protection of the breeders of swine and pork raisers of our State. Much general information was also obtained by members present, from private discussions upon the subjects of feeding, breeding, erection of proper buildings, and management of hogs. A few important questions are connected with these discussions. First, that they are of general interest to the public, and while many are relating their experiences and ideas to an individual, or friend, only the same time need be occupied in giving it to the public, when general good might result from it; that many of our citizens who have a large fund of experience that should be subject to public draft, are inclined to hide their light under a bushel, while they are capable of shortening the road of progress for others to a very great extent. This is undoubtedly a failure on the part of many of our most intelligent farmers. The time has now arrived when duty calls upon them to give others the benefit of their experience—in other words, to let their light shine upon the world. The subject of pork raising is one of very great importance, and its magnitude is increasing daily. That very many failures have occurred, and are occurring every day, no one will doubt; that one person will attain 300 to 400 lbs weight from one hog; that another will not make more than half that quantity; that one will become rich by hog raising, while another will become poor. These questions, with many others connected with this subject, should be more generally understood. There is a cause for these differences, and persons who have met with the greatest degree of success, as well as the losers, should give us the *why* and the *wherefore* of their experience for the benefit of the public. If persons attending our meetings propose only to listen, little general information will be gained. But let every member talk as they would to a neighbor or friend, and all will be benefited and instructed. Let our friends hereafter do more of this kind of talking; let each relate his simple story; let mind come in contact with mind; let the importance of the subject be brought out in its fullest and freest light, and a mutual benefit will be the result. It will be acknowledged that the importance of our subject is not as well understood as it should be. The profits to be derived by keeping this class of stock for pork purposes, under favorable circumstances, is more than double that of any other. The capital paid out for pork products in our State, annually, amounts to several million dollars more than any other kind of stock. Is it not then our duty to foster and protect this great interest with tho best of our ability? If left in the care of the breeders of horses and cattle, we may expect it to be neglected; if left to take its own course it will not receive the attention it deserves; and if it receives the united support of all interested, its progress will not surpass the natural want of the public. Let us then aim to build up a structure that may be a credit to our State. A broad field is open; shall we cultivate and improve it?

SECOND ANNUAL ELECTION OF OFFICERS.

The second annual election for officers of the Illinois Swine Breeders' Association was held at the office of "The Prairie Farmer," at the Fair Grounds, at Decatur, on Thursday evening, Sept. 30, 1870.

Mr. Thomas J. Crowder, President of the Association, occupied the chair, and called the meeting to order, which was quite largely attended by breeders of swine from all parts of the State. The following names were added to the roll of membership, and paid their initiation fee of $2:

Uriel Mills, Salem, Ill.; L. T. Clark, Onarga, Ill.; W. W. Corbett, Chicago, Ill.; J. M. Hinkle, Bushnell, Ill.; A. M. Fauley, Urbana, Ill.; J. L. Owen, Mokena, Ill.

On motion of Mr. Mills, of Salem, the meeting proceeded to the election of officers for the ensuing year, which resulted as follows:

President		Thos. J. Crowder	Springfield
Vice-President	1st District	W. W. Corbett	Chicago
"	2d District	Andrew Lowell	DeKalb
"	3d District	John B. Bailey	Oregon
"	4th District	Adam Rankin	Monmouth
"	5th District	E. P. Sisson	Galesburg
"	6th District	Frank Searles	Hadley
"	7th District	A. M. Fauley	Urbana

Vice-President	8th District	Henry Funk	Bloomington
"	9th District	J. R. Hinkle	Bushnell
"	10th District	E. P. Jones	Jacksonville
"	11th District	Uriel Mills	Salem
"	12th District	E. A. Riehl	Alton
"	13th District	W. H. Green	Cairo
"	at Large	Charles Snoad	Joliet
Treasurer		Edmund Terrill	Clayton
Secretary		Charles Snoad	Joliet

On motion of Mr. Jones, of Jacksonville, Messrs. James Devier, Thomas J. Crowder, and Charles Snoad, were appointed a Committee on Statistics.

On motion of Mr. Manon, of Decatur, the second annual meeting of this Association will be held in the city of Springfield, during the week of the meeting of the Executive Board of the State Agricultural Society.

On motion, Mr. McMahon was invited to address the meeting on the subject of chicken and hog cholera. Mr. McMahon stated that his cholera specific would cure this disease in all of its different stages. It was suggested that fifty bottles of this specific be placed in the hands of officers of this Association, and whenever a fair trial could be had, it should be made public for the benefit of the proprietor. The suggestion was finally agreed to by Mr. McMahon, and it is presumed that the public will hear from it, providing the contract is fulfilled.

On motion, the chair appointed Mr. Clark, of Onarga, Mr. Terrill, of Clayton, and Mr. Snoad, of Will county, a committee to inquire into the practicability of holding a swine fair during the fall of 1871.

On motion of Mr. Terrill, the names of Mr. Crowder, of Springfield, and Mr. McCrary, of Fulton, were added to the committee.

On motion of Mr. Corbett, the meeting adjourned.

CHARLES SNOAD,
Secretary.

SECOND ANNUAL WINTER MEETING—1871.

This Association met for its second annual session at the city council chamber, in Springfield, January 3, 1871, T. J. Crowder, President, in the chair. The attendance of breeders was quite large, well representing the State. A large number of new names was added to the list of members.

The subject of holding a swine exhibition, in the fall of 1871, was discussed at considerable length, resulting in the appointment of a special committee, with authority to advertise for proposals for the accommodation of the same. The prospects for the successful holding of such an exhibition seem very favorable.

Mr. Crowder spoke at some length of the importance of the swine interest generally, and its adaptability to the circumstances of many who have not the means or facilities to enter into the breeding and rearing of cattle.

Mr. Manon thought, in the ordinary method of feeding corn in the field, that one bushel of corn would produce ten pounds of pork.

The subject of feeding was considered. Mr. Owen believed that *seventy*-five bushels of corn, soaked or cooked, was equal in value to one hundred bushels dry corn.

Mr. Snoad would recommend feeding corn in the ear, until it gets too hard to be masticated readily. Whenever grinding can be economically done, would recommend grinding and cooking. If expensive to grind, would recommend cooking without grinding, rather than grinding without cooking. In feeding for pork, would recommend the thorough steaming of the meal, immediately placing it in a box and moistening it with three or four pails of water to a barrel; feed when at proper temperature, but not cook in quantity sufficient to be sour before use. Would provide water in such quantities as the swine would use. In feeding breeding sows or stock hogs, would make the meal into mush or thin slop. Would recommend the use of mixed grains—corn, oats and barley—one-half or two-thirds being corn, giving the larger amount of corn to the fattening stock. Would allow, at all times, ample room for exercise, especially for breeding and stock hogs.

Mr. Smith said, hogs taken off of clover pasture, having had no other food, take on fat more rapidly when put on grain in the fall, than those which have had a mixed feed of clover and grain during the summer. Care should be taken that the supply of grass be constant until they are put up for fattening.

HOW OFTEN SHALL WE FEED.

Mr. Snoad would recommend feeding pork hogs three times per day; for young pigs, up to three months, would feed four times, at regular intervals. Mr. H. Funk would feed three times per day, using soaked food of mixed grain, allowing it to stand long enough to sour. Mr. Owen would make a feed of mixed meal, made up with one bushel and a half to three or four parts of hot water, allowing it to stand over night. Would feed to breeding sows and pigs four times per day—not allowing it to sour—adding at the same time soaked corn, as much as they will eat up clean.

WALLOWING HOLES.

The general expression was decidedly against allowing swine to wallow in mud holes; but the providing of clear water in vats or troughs, where the stock could have access to it at all times, was highly recommended. Shade was considered especially advisable, by means of groves or prepared sheds.

AT WHAT AGE CAN PIGS BE MOST PROFITABLY TURNED INTO PORK.

Mr. Terrill thought a pig would give more weight up to five months old, in proportion to the food consumed, than after that age. Still, under all the circumstances attending breeding and rearing, would prefer to turn off at about sixteen months old.

Mr. Funk would be governed by the demand. If sold young, would fatten at eight or ten months; if the demand is for large hogs, would turn off at sixteen or eighteen months.

Mr. Crowder would recommend the turning into pork at eight to nine months.

Mr. Snoad also thought, with a good market, more money could be made by turning off pork within nine to twelve months.

Mr. Owen would prefer not to market until the animal had attained his growth and maturity.

BREEDS.

The general discussion showed a disposition to encourage the breeding of all the distinct varieties in their purity, while the best reports for pork making were more often the result of judicious crossing.

AGE FOR BREEDING.

The too young breeding of sows was generally discouraged, although it has been largely practiced. The most observant members would not breed under one year—that is, the pigs should not be dropped at an earlier age of the sow than twelve to fifteen months.

The too common practice of sending to market or slaughtering sows heavy with pig was strongly condemned.

DISEASES.

There was less than the usual complaint of disease, to any large extent, reported from the various parts of the State.

Mr. Snoad recommended that slacked lime be always placed within the reach of swine; also, that it be often used about the pens as a disinfectant. Would mix with the feed a small amount of sulphur, at least once a week, and use salt to a moderate extent with food.

Mr. Owen would also use lime, as proposed by Mr. Snoad; also, would give the swine free access to charcoal, which he thinks an excellent preventive of disease among them.

Messrs. Ross and Crowder recommended the occasional use of smartweed tea, mixed with the food, as an excellent corrective.

PENS.

The subject of pens was discussed, all participants agreeing that they should be light and airy. For bedding, dry earth, dry leaves, and coarse wild hay, were all recommended; dry earth, from its properties of holding the liquid manure, was especially commended.

Mr. Manon offered the following resolution:

Resolved, That this Association respectfully request the State Agricultural Society to discontinue the present sweepstake premium on swine, and substitute therefor a premium, in each class of swine, for the best boar and best sow of any age.

Resolutions of respect and condolence on the death of John R. Hinkle, a member of the Association, were passed; also, of thanks to the city council of Springfield for the use of the hall, and to the Chicago and Alton and Illinois Central railroads, for courtesies extended to the members.

The following interesting and valuable communication from Hon. L. F. Ross, of Fulton county, (although Mr. Ross claims it was not intended for publication,) on account of the many items of interest to the farmer and pork raiser it contains, we take the liberty of publishing with the proceedings of the Association. It was written from a request of the Secretary, in answer to a series of questions that were presented for discussion at the winter meeting of 1871:

AVON, ILL., *January* 18, 1871.

MR. CHARLES SNOAD,
Secretary Illinois Swine Breeders' Association.

DEAR SIR.—In accordance with your request, I submit herewith, in brief, my views on some of the questions brought before our late meeting at Springfield. The importance of pork raising as a source of value to the individual and the State, is, in my estimation, unsurpassed by any one product of the farm, and in some sections of the country more is realized annually from this one staple than all others combined. Such is believed to be the case in this (Fulton) county. It is also consumed more largely at home than either beef or mutton. These facts entitle pork raising in Illinois, and all the corn-producing States, to the very highest rank in point of pecuniary magnitude and importance. It is not likely to be produced in such quantity as to overstock the markets and render the business unprofitable. For a number of years this crop has paid highly remunerative prices to the producer, thus stimulating the production o the highest point. The past season the corn crop has been good in all parts of the country rhere corn is ever grown. The dry, pleasant weather during the fall and first winter months ias been unsurpassed for fattening, making larger averages in weight than ever known in any revious season. From Oct. 1st, 1870, to Jan. 14th, 1871, there were received at Chicago 54,000 hogs, against 671,610 for the same period last year—an increase of 182,390. On an. 14th there had been packed at Chicago 602,373, against 406,771 to same date in 1870—n increase of 195,602.

Nothwithstanding this increase in numbers and gain in average weights, and notwithstand- ng the average price in the country has been but little over one-half that it was last season, t is still remunerative, and this too at a period of great stringency in money matters. If nder such circumstances the business has not been overdone, I cannot believe it will be in he near future.

In regard to the style of pen to be used in breeding and fattening—in breeding I use a pen x 8, with a round pole spiked on each side, about 8 inches from the floor, to prevent the nother from overlying her young pigs. When the pigs are old enough to follow the mother, nd protect themselves, turn on pasture.

In fattening, I turn on a 20-acre field, well set to clover and timothy, and feed two or three imes a week, keeping corn in the ear by them all the time. In wet and bad weather, the corn is fed on a plank floor. A good shed is always near at hand, to sleep in and occupy in storms

As to the best kinds of food, etc., for sows and pigs, slops from the kitchen and dairy, thick- ned with rye, oats, or corn meal, or all if you can get them. Next to this is rye and corn soaked 4 hours in cold water. Perhaps cooking or steaming the corn and rye a part of the time, for hange, would be an improvement. It is my intention to cook food at least once a week the oming season for all my hogs.

Spring pigs can be most profitably turned into pork at 8 or 10 months old. Summer and fall pigs at from 12 to 18 months old.

All the various breeds claiming distinction should be kept pure, and their improvement encouraged by every possible means.

I know of no certain cure for what is known as hog cholera, but have cured very sick pigs with turpentine. As a preventive I have used with success Prof. Turner's recipe, composed of copperas, sulphur, black antimony and saltpetre mixed with salt and ashes. I now add epsom salts. Stone coal and coal ashes are also good for hogs. To soak the food in smartweed tea or lime water will usually be followed by improvement.

In regard to the propriety of greater concert of action and co-operation among farmers and stock raisers, there can, I think, be but one opinion among all intelligent farmers. All other trades and professions have their "Unions" and "Boards of Trade," organized for self-protection, and to advance the best interests of their members, while the farmers, who compose the larger portion of our population, and upon whom all other branches must depend for success, with but here and there an exception, act separately, take the price offered by the nearest speculator for their products, and come out at the end of the year just about even, while the speculators and sharpers on the one hand, and the railroad and elevator monopolists on the other, manage to realize princely fortunes by their kindly transacting the farmer's business for him.

That this ought not to be so all will agree. But how are we to provide a remedy? In a few words my plan for relief would be about as follows: Organize farmers' clubs in every township in the State. During the fall and winter hold weekly meetings for consultation and advice in regard to the best markets and prices; then go in person and make sales, thus saving the vast sums paid to middlemen and speculators. At these weekly meetings the time can be profitably employed in comparing views as to the best systems of farming; rearing and care of stock; best breed of stock; best implements, and best kinds of grain and vegetables.

During the month of January in each year, there should be a meeting of farmers and stock raisers, consisting of one or more members from each county in the State. This State organization can make known to the State Legislature our wishes as to the legislation deeme necessary for our protection and for advancing the farming interests of the State. It can als discuss and decide upon all questions pertaining to farming and stock-raising in our Stat The action of this State organization could be communicated to the township clubs by mean of published reports, and thus each individual member be placed in possession of the combined experience and wisdom of the best agriculturists and stock-raisers of the State; concer of action will be secured; light will be shed in regard to the transactions of the middl men, speculators and monopolists, and the modes adopted by them for spiriting away the har earnings of the farmer and stock-raiser unbeknown to them. Then, after a more thoroug understanding of the difficulties under which we labor, perfect and complete remedies can b devised.

Something of this kind would, I think, reach the difficulties under which the farming community now labor. Respectfully submitted.

LEONARD F. ROSS.

SPECIAL MEETING—TUESDAY, FEB. 21, 1871.

Pursuant to a call, a meeting of the Executive Board of this Association was held at the office of "The Prairie Farmer," on Feb. 21st an 22d, ultimo, for the purpose of considering the propriety of acceptin certain propositions made by the citizens of Chicago for holding large swine fair in that city during the fall of 1871.

This meeting was called to order by the president, Mr. Thomas J Crowder, who briefly stated the object for which it was convened.

The Secretary was requested to call the roll of names from eac congressional district, which was answered by W. W. Corbett, of th 1st; Andrew Lovell, 2d; E. P. Sisson, 5th; Frank Searles, 6th; A. M Fauley, 7th; Henry Funk, 8th; L. F. Ross, 9th; Uriel Mills, 11th at large, Charles Snoad.

Hon. J. P. Reynolds, and Mr. Rust, Chicago, J. L. Owen, o Mokena, Ill., J. S. McCreary, of Canton, and L. T. Clark, of Onarga were invited to take part in the proceedings.

The committee appointed at the January meeting of the Associatio to receive propositions for holding a swine fair during the fall of 1871 made the following report:

That in view of the very liberal proposition made by Col. R. M. Hough, Mr. Sherman superintendent of the Union Stock Yards, and others, offering the Association the use o Dexter Park, with its entire fixtures, with such additions and changes as may be desired by th Association as to accommodate any number of hogs that may be placed upon exhibition; als to furnish litter and feed, and $8,000 in money, together with all the receipts at the gates an entrance fees, your committee would very respectfully recommend the acceptance of the proposition; also that immediate steps be taken to carry out the plans desired, and the holding of the largest Swine Exposition in the history of the world.

T. L. CLARK,
EDMUND TERRILL,
CHARLES SNOAD,
Committee.

On motion of Mr. Funk, the report was accepted and adopted.

On motion of Mr. Terrill, it was decided to hold a fair the 19th, 20th and 21st of September.

On motion of Mr. Mills, it was decided to appoint one General Superintendent, one Assistant General Superintendent, and one Superintendent for each department or class.

The following classes were, on motion of Mr. Ross, of Avon, agreed upon:

Class A—Berkshire.
Class B—Poland-China or Magie.
Class C—Chester Whites.
Class D—Cheshire, Large Yorkshire and other large breeds.
Class E—Suffolk, Essex, Small Yorkshire, and other small breeds.
Class F—All crosses.

On motion, the meeting adjourned until 9 o'clock A. M. Wednesday.

WEDNESDAY, FEB. 22, 1871.

Association met at 9 A. M., President Crowder in the chair.

On motion of Mr. Ross, Col. Hough, of Chicago, was unanimously chosen General Superintendent of Grounds.

On motion of Mr. Snoad, Uriel Mills, of Salem, was chosen Assistant General Superintendent.

On motion of Mr. Clark, of Onarga, the President appointed the following gentlemen as Class Superintendents:

Class A—W. P. Sisson, Galesburg.
Class B—Henry Funk, Bloomington.
Class C—Adam Rankin, Monmouth.
Class D—L. F. Clark, Onarga.
Class E—Andrew Lovell, Sycamore.
Class F—Frank Searles, Hadley.

On motion of Mr. Ross, the Chair appointed a committee of three, consisting of Messrs. Ross, Terrill and Sisson, to draft a premium list.

On motion of Mr. Ross, the Chair appointed a committee of three to draft by-laws, rules and regulations. Messrs. Snoad, Clark and Mills were appointed.

REPORT OF COMMITTEE ON PREMIUM LIST.

The Committee on Premium List made the following report, which on motion, was accepted, and after some discussion, adopted:

CLASS A.—BERKSHIRES.

Best boar, 2 years old and over	$40 00
2d best boar 2 years old and over	20 00
Best boar 1 year old and under 2	40 00
2d best boar 1 year old and under 2	20 00
Best boar 6 months and under 1 year	40 00
2d best boar 6 months and under 1 year	20 00
Best boar under 6 months old	40 00
2d best boar under 6 months old	20 00
Premium for Sows the same.	
Best sow with litter of pigs of not less than 5 and not over 6 months old	100 00
2d best	50 00
Best boar of any age	100 00
Best sow of any age	100 00

CLASS B.—POLAND-CHINA, OR MAGIE.

Same premiums as Class A.

Class C, same as in Classes A and B.

CLASS D.—CHESHIRE, LARGE YORKSHIRE AND OTHER LARGE BREEDS.

Best boar 2 years old and over	$30 00
2d best boar 2 years old and over	15 00
Best boar 1 year old and under 2	30 00
2d best boar 1 year old and under 2	15 00
Best boar 6 months old and under 1 year	30 00
2d best boar 6 months old and under 1 year	15 00
Best boar under 6 months old	30 00
2d best boar under 6 months old	15 00
Premium on Sows the same.	
Best sow with litter of pigs, not less than 5 and not over 6 months old	60 00
2d best	30 00
Best boar of any age	60 00
Best sow of any age	60 00

CLASS E.—SUFFOLK, ESSEX, SMALL YORKSHIRE AND OTHER SMALL BREEDS.

Same premiums as in Class D.

Class F—All Crosses.—Same premiums as in Classes D and E.

CLASS G.—GENERAL SWEEPSTAKES.

URIEL MILLS, *Superintendent.*

Best display of hogs, not less than 10 or over 20, first premium	$1,000 00
2d best, same as above	500 00
3d best, same as above	250 00
Best 10 pigs of any breed, not less than 6 or over 10 months old	200 00
Best boar and 3 sows, any age or breed	200 00
2d best	100 00

The Committee to draft rules and regulations for the Fair, made the following report, which, on motion, was accepted and adopted:

GENERAL RULES AND REGULATIONS.

Dexter Park will be open for the reception of articles or stock on the 16th of September, and such may be shipped to the care of the General Superintendent of Grounds, but in no case will such articles or stock be brought on the grounds and placed on exhibition except by and at the expense of the owner or his authorized agent.

2d. Exhibiters of machinery are desired to ship such as are intended for exhibition, as early as possible, so as to give ample time for transportation.

ENTRIES.

1. May be made by application to the Secretary after the first of September, and at the Fair Grounds after September 17th, and until Tuesday, September 19, at 12 o'clock, when the entry books will be closed. Blank applications will be furnished on which to specify exhibiter's name and address, with description of the animal or article offered.

2. Each exhibiter must purchase a season or membership ticket of the Treasurer, before being regarded as an exhibiter. Only one member of a firm will be admitted to the grounds on the ticket which entitles the firm to compete.

3. Each person intending to become an exhibiter shall, at least ten days before the Fair, notify the Secretary of the number of hogs or pigs that he intends to place on exhibition.

4. Every animal must be entered for competition in the name of the owner.

5. On the entry of each animal or article a card will be furnished the exhibiter, specifying the class, the lot and the number of the entry, which card must be attached to the pen or article during the exhibition.

6. No animal or article will be assigned a place on the grounds until the entry shall be made, as above directed.

7. Satisfactory evidence shall be furnished, by each exhibiter, (when required) the superintendent and members of committee, as to the age and purity of blood of stock placed on exhibition.

8. A single animal may be also exhibited as one of a herd or pair (sow and litter of pigs not considered a herd) and in Sweepstakes, but shall not otherwise be entered in more than one lot.

9. Exhibiters will, at all times, give the necessary personal attention to whatever they may have on exhibition, and at the close of the Fair take entire charge of the same.

10. Diligence will be used by the officers of the Society to prevent injury to or loss of animals or articles on exhibition; but they will not be responsible for any damage or loss that may occur.

AWARDING COMMITTEES.

1. Copies of this premium list will be sent to the Secretary of each County Agricultural Society in this State, and to others, upon application to the Secretary and to the Awarding Committees.

2. Members of Awarding Committees will report themselves to the Superintendents, at their respective departments, at one o'clock P. M. of the first day of the Fair, and at nine o'clock A. M. each day thereafter, of the days fixed for awarding premiums on the lots on which they respectively judge, where all vacancies will be filled, appointments made, etc., by the Superintendents of departments.

3. No person shall act as judge in any lot in which he may be an exhibiter, or agent of an exhibiter in the same.

4. No animal or article, deemed unworthy, shall be awarded a premium, but no premium shall be withheld merely because there is no competition.

5. Any person attempting to interfere with the judges during their adjudication, will be promptly excluded from competition.

6. Any exhibiter who shall tear off a premium ribbon, or authorize another person to do so, in presence of an awarding committee, or shall otherwise insult such committee, shall forfeit the premium and be excluded from competition, unless a satisfactory apology to the President and Superintendent of Department be made.

7. The judges will report only the animals or articles entitled to premiums in the regular list, except they may especially commend such others as may be deemed worthy of commendation.

8. In case of a tie, another judge shall be called in by the Superintendent of Department, whose vote shall be confined to the entries having the greatest number of votes, and shall be final.

9. Purity of blood, as established by pedigree, a satisfactory evidence of the same, symmetry, size, early maturity and general characteristics of the several breeds of animals will be considered, and proper allowance be made for age, feeding and other circumstances.

10. Should any doubt arise as to the regularity of entry, or any other important matter which the committee feel incompetent to decide, they may at once report the same to the Superintendent of the proper department.

11. Each award must be written in a plain, careful manner, on blank page opposite the entry.

12. The books must be returned by the Superintendent of each department to the Secretary, as soon as the awards in each are completed.

13. Great care must be exercised to preserve the Awarding Committee's books, and the awards must be entered as above, in a plain legible manner in the proper place, as the premiums will be paid on the authority of these entries only.

14. Awarding Committees will be particular to observe the following rules: Blue ribbons are designed for first premiums, and red ribbons for second premiums, which shall be affixed in their proper place, by the Superintendent, under the direction of the Awarding Committees at the time of the awards.

15. No animal over 15 months of age shall be allowed to compete for premiums in breeding classes, unless the same shall have bred during the year.

RULES APPLICABLE TO ANIMALS.

1. If it is ascertained that an animal is entered in the ring in which it does not properly belong, it is the duty of the Superintendent of Department to instruct the committee not to award it a premium.

2. Feed and litter will be furnished, without charge, to exhibiters, at convenient points on the grounds. For information, apply to the Superintendent of feed at his office. Water in abundance and at convenient points.

3. No animal or article on exhibition can be removed from the grounds until the close of the Fair.

SUPERINTENDENTS OF DEPARTMENTS.

1. Each Superintendent of a Department will have the selection of his assistants, the arrangement and supervision of all animals or articles on exhibition in his department, and be responsible to the Executive Committee for his management of the same.

2. He will afford the Awarding Committee every facility for examination. Will affix the prizes under the direction of the Committees, and when the Awarding Committees are not on duty, will take charge of the books. When the awards are finished, he will return the books to the Secretary.

3. Each Superintendent is expected to exercise great care in preserving and returning the Awarding Committees' books, as upon the entries of awards in them and upon no other authority, can checks for premiums be drawn.

4. The Superintendent of Grounds will have charge of the grounds and police. All articles intended for exhibition, shipped by railroad or otherwise, may be addressed to his care, but will not be brought on the grounds except by the owner or his agent, nor will the Superintendent of Grounds, or the Association, in any case be responsible for transportation. He or his assistant will direct exhibiters, on their arrival, to proper departments on the grounds, assign places for encampment, and exercise a general supervision, preserving order and decorum. He will see that a proper supply of water for drinking purposes is on the grounds and convenient of access, and will take charge of public sales of stock during the Fair.

PAYMENT OF PREMIUMS.

1. Checks for premiums will be paid in cash, except where otherwise noted.

2. Soon after the awards are made and the books returned to the Secretary, he will draw, and on application deliver to those entitled to them, checks on the Treasurer for the several amounts of cash premiums.

3. These checks must be indorsed, as they will be payablo to order, not to bearer, and on presentation to the Treasurer, properly indorsed, will be paid as above.

4. Checks for premiums, not applied for during Fair week, will be forwarded by the Secretary on receipt of proper instructions, at any time within three months after the award. Those not applied for within that time will be considered as donated to the Society.

ADMISSION TO THE GROUNDS.

All persons, whether exhibiters or not, can obtain tickets for admission to the grounds at the Treasurer's office, near the entrance gate, as follows:

Season ticket, entitling the purchaser to compete for every premium, and to be admitted to the grounds during the Fair, $1. Membership ticket, $2. Single ticket, admitting one person during the day, 50 cents; children, 12 years and under, 25 cents. Ticket admitting one horse and rider once, 75 cents. Ticket admitting one horse vehicle once, 40 cents. Ticket admitting ordinary two horse vehicle once, 50 cents. Each occupant of a vehicle must have a season or single ticket.

A sufficient police force, under the direction of the General Superintendent of the Grounds, assisted by a corps of detectives, will be on the grounds night and day.

Parties who prefer to occupy the camping ground will find every necessary arrangement for their safety and accommodation. They will apply to the General Superintendent of Grounds.

No persons will be permitted to remain on the grounds over night, except those holding membership or complimentary tickets, unless they have purchased tickets for the following day.

THE PRESS.

Editors and reporters for the press will be provided with ample facilities for obtaining and transmitting information.

RAILROAD AND HOTEL ARRANGEMENTS, ETC.

The usual railroad facilities will be extended to exhibiters and visitors at this Fair.

All railroad passenger tickets must be stamped by the Secretary on the Fair grounds, in order to entitle those holding them to return free.

On articles or animals designed for exhibition at the Fair, the freight must be *prepaid at the station whence they are shipped.* Freight bills must be taken, and those bills must be stamped by the Secretary, on the grounds. On return of the articles or animals to the station whence they were shipped, with freight bill stamped and without change of ownership, the amount prepaid will be refunded.

The Committee of Reception consisted of Gen. L. F. Ross, Hon. J. P. Reynolds, and W. W. Corbett, Esq.

On motion of Mr. Owen, the chair appointed J. S. McCreary, of Canton, T. L. Clark, of Onarga, and Edmund Terrill, Special Committee to superintend the building of pens.

On motion of Mr. Mills, it was decided to admit all persons that have or may become members of this Association, free during the Fair of 1871.

On motion of Mr. Ross, all persons exhibiting stock shall pay a commission of five per cent. into the treasury of the Association, upon all sales of stock, by private sale or otherwise, made during the Fair.

On motion, it was determined that each member present should present the names of two or more persons to act upon the General Sweepstakes Committee. The following names were designated:

Hon. J. M. Palmer, Springfield; Judge C. B. Lawrence, Galesburg; Hon. Geo. Brown, Toronto, Ont.; Hon. Lucius Salsbury, Salsbury, Mo.; David Kreigh, Chicago; Col. A. C. Babcock, Fulton; Dr. Geo. Sprague, Des Moines, Iowa; Gen. J. G. Fonda, Fountain Creek, Ill.; Col. P. B. Dolman, Brunswick, Mo.; John Cunningham, Salem; Thos. Carmel, Salem; Moses Dean, Sycamore; Thos. Smith, Creston; Osborn Bounard, Bloomington; J. H. McGaen, Piqua, Ohio; Sam'l Holderman, Morris, Ill.; Hamilton Stanley, Mokena, Ill.; Levi Ashbrook, St. Louis; C. M. Culbertson, Chicago; Col. John Hancock, Chicago; Hon. S. W. Randall, Joliet; J. I. Milliken, Hamilton, Ohio; John M. Poorman, Williamsville; S. V. Curtis, Middletown, Ohio; Charles Louder, Plainfield, Ind.

On motion of Mr. Snoad, the members of the Executive Board present were requested to send the name of one individual to act as a member of committee in each class, to the Secretary, to be assigned to classes as directed by the said members.

On motion of Mr. Snoad, Messrs. Corbett, Rust and Crowder were appointed a Special Committee to solicit special premiums, and to add such names to their committee as they may deem advisable.

On motion of Mr. Corbett, the Secretary was authorized to employ such assistance as he may deem advisable.

On motion of Mr. Snoad, the Committee on Reception was requested to procure suitable music, and a speaker to deliver an address on the third day of the Fair.

On motion of Mr. Rust, Col. Hough, Messrs. Corbett, Crowder and Snoad were appointed a Committee on Unfinished Business, and to make such additional arrangements as may be deemed best for the interest of the Association, and to secure the most complete success to the coming Swine Exposition.

On motion of Mr. Funk, the meeting adjourned, subject to call of the President.

CHARLES SNOAD, *Sec'y.*

AWARDS OF PREMIUMS AT THE NATIONAL SWINE EXPOSITION,

HELD AT CHICAGO, SEPTEMBER 19, 20, 21 AND 22, 1871.

President—THOS. J. CROWDER, Springfield, Illinois.
Treasurer—EDMUND TERRILL, Clayton, Illinois.
General Superintendent—COL. R. M. HOUGH, Chicago, Illinois.
Assistant Superintendent—URIEL MILLS, Salem, Illinois.

CLASS A—BERKSHIRES.

W. P. SISSON, *Superintendent*, Galesburg, Illinois.

Best boar 2 years old and over—1st, J. R. Craig, Edmonton, Canada, "Sambo;" 2d, J. B. Ryburn, Bloomington, Ills. Entries, 16.

Best boar 1 year old and under 2—1st, Thomas Ennis, Philo, Ills., "Ace of Spades;" 2d, J. G. Loose, Springfield, Ills. Entries, 17.

Best boar 6 months old and under 1 year—1st, S. H. Clay & Co., Paris, Ky.; 2d, H. S. Manon, Decatur, Ills. Entries, 32.

Best boar under six months old—1st, S. H. Clay & Co., Paris, Ky.; 2d, J. M. Wills, Bloomington, Ills. Entries, 31.

Best sow 2 years old and over—1st, Adam Rankin, Monmouth, Ills.; 2d, J. G. Loose, Springfield, Ills. Entries, 34.

Best sow 1 year old and under 2—1st, George Roach, Hamilton, Canada; 2d, J. G. Loose, Springfield, Ills. Entries, 28.

Best sow 6 months old and under 1 year—1st, J. R. Craig, Edmonton, Canada, "Romford Queen;" 2d, S. H. Clay & Co., Paris, Ky. Entries, 60.

Best sow under 6 months old—1st, S. H. Clay & Co., Paris, Ky.; 2d, Miss Rose E. Sand, Joliet, Ills., "Victoria." Entries, 47.

Best sow with litter of pigs of not less than 5 and not over 6 months old—1st, Adam Rankin, Monmouth, Ills.; 2d, J. R. Craig, Edmonton, Canada. Entries, 14.

SWEEPSTAKES.

Best boar of any age—J. R. Craig, Edmonton, Canada, "Sambo," $100. Entries, 33.
Best sow of any age—Adam Rankin, Monmouth, Ills., $100. Entries, 62.

CLASS B—POLAND-CHINA, OR MAGIE.

ADAM RANKIN, *Superintendent*, Monmouth, Illinois.

Best boar 2 years old and over—1st, Shepherd & Alexander, Charleston, Ills., "Sweepstakes;" 2d, Baldridge & Miller, Hagerstown, Ind. Entries, 17.

Best boar 1 year old and under 2—1st, Shepherd & Alexander, Charleston, Ills., "Jim Crow;" 2d, B. J. Orton, Geneseo, Ills. Entries, 14.

Best boar 6 months old and under 1 year—1st, J. L. Owen, Mokena, Ills.; 2d, McCreary & Carey, Canton, Ills. Entries, 20.

Best boar under 6 months old—1st, J. S. McCreary, Canton, Ills.; 2d, H. M. & W. P. Sisson, Galesburg, Ills. Entries, 36.

Best sow 2 years old and over—1st, H. M. & W. P. Sisson, Galesburg, Ills.; 2d, McCreary & Carey, Canton, Ills. Entries, 31.

Best sow 1 year old and under 2—1st, H. M. & W. P. Sisson, Galesburg, Ills., "Oxford;" 2d, W. W. Ellsworth, Woodstock, Ills. Entries, 24.

Best sow 6 months old and under 1 year—1st, Edmund Terrill, Clayton, Ills., "Kate;" 2d, Baldridge & Miller, Hagerstown, Ind. Entries, 32.

Best sow under 6 months old—1st, W. W. Ellsworth, Woodstock, Ills.; 2d, Banks & Zigler, Laporte, Ind. Entries, 39.

Best sow with litter of pigs of not less than 5 and not over 6 months old—1st, Dixon & Kidder, Farmington, Ills.; 2d, J. D. Spahr, Centreville, Ind. Entries, 16.

SWEEPSTAKES.

Best boar of any age—J. S. McCreary, Canton, Ills.; $100. Entries, 32.

Best sow of any age—Shepherd & Alexander, Charleston, Ills., "Black Bess," $100. Entries, 43.

CLASS C—CHESTER WHITES.

Henry Funk, *Superintendent*, Bloomington, Illinois.

Best boar 2 years old and over—1st, animal subsequently ruled out; 2d, Chas. Snoad, Joliet, Ills. Entries, 5.

Best boar 1 year old and under 2—1st, animal subsequently ruled out; 2d, Geo. W. Gage, Chicago, Ills. Entries, 4.

Best boar 6 months old and under 1 year—1st, N. N. Jones, Normal, Ills.; 2d, A. Lovell, Sycamore, Ills. Entries, 14.

Best boar under 6 months old—1st, N. N. Jones, Normal, Ills.; 2d, Chas. Snoad, Joliet, Ills. Entries, 28.

Best sow 2 years old and over—1st, Chas. Snoad, Joliet, Ills.; 2d, L. W. Stewart, Monmouth, Ills. Entries, 7.

Best sow 1 year old and under 2—1st, Chas. Snoad, Joliet, Ills., "Queen of the Chesters;" 2d, N. N. Jones, Normal, Ills. Entries, 12.

Best sow 6 months old and under 1 year—1st, A. Lovell, Sycamore, Ills.; 2d, W. T. & M. Painter, Painter's Bridge, Penn. Entries, 19.

Best sow under 6 months old—1st, Chas. E. Kercheval, Joliet, Ills.; 2d, Geo. W. Gage, Chicago, Ills. Entries, 43.

Best sow with litter of pigs of not less than 5 and not over 6 months old—1st, H. D. Court, Battle Creek, Mich.; 2d. N. N. Jones, Normal, Ills. Entries, 7.

SWEEPSTAKES.

Best boar of any age—Animal subsequently ruled out.

Best sow of any age—A. Lovell, Sycamore, Ills., $100. Entries, 14.

CLASS D—CHESHIRE, LARGE YORKSHIRE AND OTHER LARGE BREEDS.

L. T. Clark, *Superintendent*, Onarga, Ills.

Best boar 2 years old and over—1st not awarded; 2d, J. H. Saunders, Sigourney, Iowa. 1 entry.

Best boar 1 year old and under 2—1st, J. H. Saunders, Sigourney, Iowa, "Johnnie;" 2d, John Taylor, Waupon, Wis. Entries, 2.

Best boar under 6 months old—1st, C. Edmundson, Brantford, Ontario; 2d, J. H. Saunders, Sigourney, Iowa. Entries, 7.

Best sow 2 years old and over—1st, James Baker, Davenport, Iowa; 2d, N. N. Jones, Normal, Ills. Entries, 2.

Best sow 1 year old and under 2—1st, J. H. Saunders, Sigourney, "Lily." 1 entry.

Best sow under 6 months old—1st, J. H. Saunders, Sigourney, Iowa; 2d, C. Edmundson, Brantford, Canada. Entries 5.

Best sow with litter of pigs of not less than 5 and not over 6 months old—1st, J. H. Saunders, Sigourney, Iowa; 2d, John Taylor, Waupun, Wis. Entries, 2.

SWEEPSTAKES.

Best boar of any age—J. H. Saunders, Sigourney, Iowa, $60. Entries, 4.

Best sow of any age—to same, "Lily," $60. Entries, 4.

CLASS E—SUFFOLK, ESSEX, SMALL YORKSHIRE AND OTHER SMALL BREEDS.

ANDREW LOVELL, *Superintendent*, Sycamore, Ills.

Best boar 2 years old and over—1st, Wood & Driggs, Adrian, Mich.; 2d, John Francis, New Lennox, Ills. Entries, 5.

Best boar 1 year old and under 2—1st, Byers & Campbell, Nevada, Ohio, "Cupid;" 2d, Jas. Main, Boyne, Canada, "King Lear." Entries, 9.

Best boar 6 months old and under 1 year—James Main, Boyne, Canada, "Young Giant;" 2d, Geo. Roach, Canada. Entries, 10.

Best boar under 6 months old—1st, Byers & Campbell, Nevada, Ohio; 2d, C. Edmundson, Brantford, Canada. Entries, 7.

Best sow 2 years old and over—1st, Wood & Driggs, Adrian, Mich.; 2d, Byers & Campbell, Nevada, Ohio. Entries, 7.

Best sow 1 year old and under 2—1st, L. T. Clarke, Onarga, Ills.; 2d, Wood & Driggs, Adrian, Mich. Entries, 10.

Best sow 6 months old and under 1 year—1st, James Main, Boyne, Canada, "Canadian Belle;" 2d, Wood & Driggs, Adrian, Mich. Entries, 13.

Best sow under 6 months old—1st, C. Edmundson, Brantford, Ontario; 2d, Wood & Driggs, Adrian, Mich. Entries, 4.

Best sow with litter of pigs not less than 5 and not over 6 months old—1st, S. H. Clay, Paris, Ky.; 2d, Wood & Driggs, Adrian, Mich. Entries, 3.

SWEEPSTAKES.

Best boar of any age—Byers & Campbell, Nevada, Ohio, $60. Entries, 14.

Best sow of any age—L. T. Clarke, Onarga, Ills., $60. Entries, 12.

CLASS F—ALL CROSSES.

FRANK SEARLES, *Superintendent*, Hadley, Ills.

Best boar 2 years old and over—1st, T. W. Harrington, Farmington, Ills.; 2d, L. T. Clarke, Onarga, Ills. Entries, 3.

Best sow 2 years old and over—1st, Charles Saoad, Joliet, Ills.; 2d, James Baker, Davenport, Iowa. Entries, 3.

Best sow 1 year old and under 2—J. C. Darnell, Elmwood, Ills.; 2d, same. Entries, 2.

Best sow over 6 months old and under 1 year—1st, J. C. Darnell, Elmwood, Ills.; 2d, John Lee, Kickapoo, Ills. Entries, 5.

Best sow under 6 months old—1st, J. C. Darnell; 2d, John Hunt, Mokena, Ills. Entries, 3.

Best sow with litter of pigs of not less than 5 and not over 6 months old—1st, J. C. Darnell 1 entry.

SWEEPSTAKES.

Any age—no award.

Best sow of any age—Chas. Snoad, Joliet, Ills., $60. Entries, 10.

CLASS G—GRAND CHICAGO SWEEPSTAKES PREMIUMS.

Best display of hogs of any one breed, not less than 10 nor over 20—1st, S. H. Clay & Co., Paris, Ky., Berkshires, $1,000; 2d, J. R. Craig, Edmonton, Ontario, Berkshires, $500; 3d, Edmund Terrill, Clayton, Ills., Poland-Chinas, $250; 4th, H. M. & W. P. Sisson, Galesburg, Ills., Poland-Chinas, 3-ton Forsythe scales, value $175. Entries, 37.

Best 10 pigs of any one breed, not less than 6 nor over 12 months old—H. M. & W. P. Sisson, Galesburg, Ills., Poland-Chinas, $200. Entries, 16.

Best boar and 3 sows of any age or breed—1st, H. M. & W. P. Sisson, Galesburg, Ills., Poland-Chinas, $200; 2d, John R. Craig, Edmonton, Ontario, Berkshires, $100.

Best 3 fatted hogs—N. N. Jones, Normal, Ills., $150.

Best 3 fatted pigs not less than 6 nor over 12 months old—A. Lovell, Sycamore, Ills., 100.

CLASS H—FARM MILLS, COOKING APPARATUS, ETC.

A. M. Fauly, *Superintendent*, Urbana, Ills.

Best farm mill—Challenge Mill Company, Batavia, Ills., $100.

Best apparatus for cooking food for stock—Anderson Steamer and Heater Company, Kewanee, Ills., $100.

No essay on the breeding and management of Swine was submitted for prize offered.

No models of Piggery were submitted for prize offered; but several drawings were received —some of them quite elaborate—which were deferred until the winter meeting of the Board, no premium having been offered for plans and drawings.

GRAND SPECIAL PRIZES.

Offered by "The National Live-Stock Journal," "Prairie Farmer," and "Western Rural."

Best display of hogs or pigs of any one breed, not less than 10 nor more than 20, bred by the exhibiter—1st, Charles Snoad, Joliet, Ills, Berkshires, $200; 2d, Adam Rankin, Monmouth, Ills., Berkshires, $100.

Offered by Fairbanks, Greenleaf & Co., Scale Company, Chicago, Ills.

Best 10 pigs under 6 months old, of any breed—S. H. Clay, Paris, Ky., Berkshires, a 4-ton stock scale, value, $200.

Offered by Tubbs & Sofield, Young America Steamer, Young America, Ills.

For second best 10 pigs under 6 months old, of any breed—M. H. Rayburn, Towanda, Ills., Berkshires, Young America steamer, value, $75.

Offered by Proprietors of the Victor Scale Company, Chicago, Ills.

For best display of hogs or pigs by any one exhibiter—J. R. Craig, Edmonton, Ontario, Berkshires, 4-ton Victor scale complete, value $175.

Offered by Manufacturers of the Anderson Steamer, Kewanee, Ills.

For second best display of hogs or pigs, by any one exhibiter—Adam Rankin, Monmouth, Ills., Berkshires, one Anderson Steamer, value $175.

[Comments of the Editor of "National Live Stock Journal."]

THE NATIONAL SWINE EXPOSITION.

As we anticipated, this affair proved to be an entire success, so far as the extent and quality of the exhibition was concerned. The leading breeds of swine were represented by a sufficient number of good specimens to enable any one not familiar with a particular breed to obtain a very just idea of its characteristic features and present development under the hands of its intelligent friends. The general public, and even the best informed breeders themselves, needed exactly what this exposition afforded—an opportunity to study and compare the principal varieties, one with another, face to face, through the whole list. And not this alone, but an opportunity also to learn the minor points of variation disclosed by a careful study of individual animals of the same breed. It is quite certain that many preconceived notions among breeders were considerably modified, and that some at least prepared themselves, by their examinations, for a new departure in their practice of breeding. It was generally admitted that there were, in each class, one or more animals which deserved to rank as perfect types—which in all essential and fancy points were precisely what the best conceivable standard of the breed required. The awards of the different committees do not quite show such to be the case; but still, it was generally recognized as a fact by many competent and painstaking observers.

The points of agreement and the points of difference in these typical animals throughout the various breeds, attracted our attention. Comparing these animals with less perfect specimens of the same breeds, we found them to agree in possessing—

1. Short, neat heads, dish-faces, neat delicate ears, not exactly adapted to the manufacture of silken purses, but high-bred and blood-like.
2. Broad and full shoulders, crops, backs and rumps, carrying the fullness and width of chest and shoulder well back to, and including the hams. Hams well let down on the hocks, extending well forward and full behind; the upper line of barrel straight, or slightly arched, but never dropping behind the shoulders.
3. Fineness of bone, with strength of joint, together with a general appearance of high quality and constitutional vigor, indicating an aptitude to fatten readily.
4. The average size, age and condition considered, of the breed to which each belonged, neither overgrown nor dwarfed.

The points of difference among these typical specimens were chiefly:

1. *Color*—which varied from the creamy white of the Suffolk, Cheshire, Yorkshire and Chester White, to the jet black of the Essex; making, in the case of the Poland-China, a spotted hog, with every possible intermixture of the white, black and sandy consistent with distinct bands, spots and blotches; and of the Berkshire, a black body, with white on the feet, face and tip of the tail only.

2. *Size*—From a gross weight in the mature Suffolk and Essex of about 300 pounds, to a gross weight in the Poland-China and Chester White of about 600 pounds; the Berkshire and large Yorkshire ranging at about 400 pounds, and the Cheshire at something less in this comparison.

3. *Form*—Except in the minor parts, as the ears, which in the Essex and Suffolk are always upright, in the Chester White and Poland-China always drooping, and in the Berkshire some times one and some times the other, the general form varies from the almost round barrel of the Essex and Suffolk to the broad deep sides of the Poland-China and Chester White; the Berkshire and some others ranging about half way between these extremes.

4. *Activity*—In this respect the Berkshire on the one hand, and the Suffolk or short-faced Lancashire on the other, represent the two extremes; the former possessing probably all the animation and sprightliness consistent with easy fattening properties, and the latter being as lethargic and stupid as it is possible to be, and yet undergo the necessary exertion to make a meal out of a full trough; while as a gleaner after cattle, under the Western system of feeding corn in the field, the Berkshire and his grades have few rivals, and the Suffolk, as a cottager's pig, to "stay where he is put," and convert into pork, or rather lard, whatever finds its way to his mouth, can hardly be excelled. Intermediate between these are the other breeds named; the Essex, probably, being next to the Berkshire in this regard, followed by the Poland-China.

5. *Period of natural maturity*—That there is much difference in respect to this, is perfectly apparent and well understood. In the absence of data derived from careful experiments to ascertain the exact truth, it may be safe to assume that average specimens of the different breeds, full-fed under similar conditions and with equally nutritious food, will ripen at periods corresponding with their respective weights at maturity. That is to say, if a Poland-China or Chester White will mature at 20 months with a weight of 600 lbs., the smaller breeds will mature as much earlier, proportionally, as their weights at maturity are less, the condition of feeding being the same in all cases. This, however, has nothing to do with the question of relative value after fattening, nor with the question: which will render the most profitable return for the food and labor bestowed in rearing and fattening?—neither of which do we propose to discuss.

6. *Breeding*—By this we mean much the same as the horseman understands by "blood." The English breeds on exhibition all show

that uniformity of characteristic feature which indicates fixedness of type. It is also apparent that they have reached a point of refinement and finish hardly to be expected in any but medium-sized or small breeds. We confess, however, to an agreeable surprise in looking over the pens of Poland-Chinas and Chester Whites—both American breeds of the largest size—to observe such striking uniformity of form and character. They are unquestionably well established *breeds*, if five hundred to a thousand specimens of each, drawn from many different parts of the country, and possessing well defined family characteristics, can be relied upon to settle such a question. They are breeds, too, formed in this country in response to a popular American demand for a hog differing essentially, in every important respect, from any other in existence.

We do not care to speak of the merits of the different lots on exhibition, or to make comparisons between breeders. The awards of committees are published officially in the present number. It is sufficient for us to say, that every one of them deserves well of his country. There was not an entry made which would not, at an ordinary State Fair, have taken a premium; and a second, third or fourth prize with such competition, is a high honor.

ELECTION OF OFFICERS 1871.

The third annual election for officers of the Illinois Swine Breeders' Association was held at the office of Superintendent of Class D, on the State Fair Grounds at Du Quoin, Sept. 27, 1871.

The President, Mr. Thomas J. Crowder, occupied the chair and called the meeting to order. Mr. A. B. Hulit, of Canton, J. B. Maple, of Canton, and Jesse Cloyd, of Champaign, became members of the Association.

Mr. Thos. J. Crowder declining to accept the re-nomination for President of the Association for the ensuing year, the name of Hon. L. F. Ross was presented, and on motion of Mr. Maple, of Fulton, he was unanimously elected.

The following named gentlemen were chosen as Vice-Presidents from their respective Congressional districts:

1st District	C. M. CULBERTSON	Chicago
2d "	A. J. LOVELL	Sycamore
3d "	A. RANKIN	Monmouth

4th District	Edmund Terrill	Clayton
5th "	W. P. Sisson	Galesburg
6th "	Charles E. Kercheval	Joliet
7th "	B. Alexander	Charleston
8th "	Henry Funk	Bloomington
9th "	J. S. McCreary	Canton
10th "	J. C. Smith	
11th "	Uriel Mills	Salem
12th "	H. J. Hyde	Godfrey
13th "	G. L. Owen	Williamson county
At large	Charles Snoad	Joliet

On motion, Chas. Snoad, of Will county, was re elected Secretary, and Mr. Thos. J. Crowder, of Williamsville, Treasurer.

On motion of Mr. Manon, a committee of three was appointed to draft resolutions expressive of the high appreciation of members of this Association for the generosity and magnanimity of the citizens of Chicago, in their efforts to make the first National Swine Exposition a success. The chair appointed Messrs. Manon of Decatur, Hulit of Fulton, and Snoad of Will county.

It was the universal opinion that the partial financial failure of the exhibition could be attributed to the lack of generosity on the part of railroad corporations, by refusing to sell excursion tickets according to the usual custom. And while it is to be regretted that finances were wanting, to some extent, yet it was also gratifying to those especially interested to look upon so large and grand an exhibition of swine, combining, as was expected, the finest specimens of the swine family the world contains; and the expression was general that as an exhibition, it was a success beyond the expectations of the most sanguine. And it was stated as a fact, that from nearly all parts of the country individuals went to their respective railroad depots with the intention of going to the exhibition, but found upon inquiry that there was no reduction of rates, and hence returned to their homes. At the time the arrangements were made for holding the Exposition, it was considered by all that the railroad companies would afford their usual accommodations. But to our very great disappointment it was refused, even after the solicitation of some of Chicago's leading citizens.

Why such a blow should be hurled at Chicago by the great railroad interest, we are unable to say, while accommodations of the same nature are afforded St. Louis. Chicago should watch the current, as the same great interest that has done so much towards giving her wealth and position, may gradually undermine and injure her prosperity. This may be a minor affair, but people are surprised everywhere at the discrepancy made between the two great leading cities of the West. St. Louis is awakened, and to nothing can she attribute or give more credit for the rapid progress she is making, than to her unsurpassed and almost world-renowned Agricultural and Mechanical Association.

The Committee on Resolutions made the following report:

Resolved, That to "The Prairie Farmer," "National Live Stock Journal," "Western Rural," and to Col. R. M. Hough, John B. Sherman, of the Union Stock Yards Company, and to many of the enterprising citizens of Chicago, who contributed in money or otherwise, this Association is especially indebted: 1st. For the necessary means with which to pay premiums. 2d. For their untiring efforts to make everything agreeable and pleasant to visitors and exhibiters, and the magnanimous spirit thus shown. 3d. For the energy and efforts on the part of the entire press of the city to arouse the curiosity and interest of the people to this grand exhibition of swine. 4th. That should it ever be in our power to compensate them in full or in part, we will heartily and without reserve pledge our united effort so to do.

On motion, the meeting adjourned.

CHARLES SNOAD, *Secretary.*

THIRD ANNUAL MEETING OF THE ASSOCIATION.

The third annual meeting of the Illinois State Swine-Breeders' Association was held at the city of Springfield, in the rooms of the State Agricultural Society, on Wednesday, Thursday and Friday, Jan. 17th, 18th and 19th, 1872.

Ex-President Thomas J. Crowder occupied the chair, and called the meeting to order.

Two models of piggeries were presented by H. R. Wood, of Frankfort, Ill., and two elaborate drawings by Dr. W. L. Challiss, of Atchison, Kansas; also, one by "Farmer's Wife," Bloomington, Ill., and one by John Hamilton, Bloomington, Ill.

On motion of Gen. L. F. Ross, of Fulton, drawings and models were allowed to come in competition, as it was the intention to award the first premium to the best plan of a piggery, instead of, as stated in premium list, the best model.

On motion, a Special Committee was appointed to examine the different plans and make the awards, consisting of Thomas J. Crowder of Williamsville, H. J. Hyde of Godfrey, Gen. L. F. Ross of Fulton county, and Charles Snoad of Will county.

Whereupon the Committee made the following report:

Your Committee appointed to award premiums for the best plan for Piggery, respectfully report that, upon a careful examination of the different plans presented, we are of the opinion that each and all are lacking in practical points of construction; and while we cannot fully indorse and recommend any of them for general use without changes or modifications, we are of the opinion that the plan presented by H. R. Wood, of Frankfort, Ill., is more nearly adapted to the wants of the public, and therefore recommend that the first prize be awarded for the same.

ESSAYS AND DISCUSSIONS.

An essay upon the Breeding and Management of Swine was presented by Mr. George Gardner, of Baltimore, Md., which was read by the Secretary.

On motion of Mr. Sisson, Thos. J. Crowder, of Williamsville; H. J. Hyde, of Godfrey, and Chas. Snoad, of Joliet, were appointed a committee to settle the unfinished business connected with the late Swine Exposition at Chicago; also, to call a meeting of the Executive Committee of this Association, to be held in the city of Chicago, at such time as may appear the most practicable.

The subjects named for consideration in the call were informally discussed. We present the following synopsis:

1st. It was the universal opinion that during a season of low prices, a greater exertion should be put forth to improve the quality of our stock, as the very best means through which we may expect to realize a profit. For illustration, take pork at $5 per cwt. as our standard. If the price shall depreciate 10 or 20 per cent. annually from this, should we improve the quality of our animals 10 or 20 per cent, we still receive $5 per cwt. for the product; when, if the price should advance in the same proportion, it would thus give us a much larger profit. It was considered as one of the great errors into which the American farmer is apt to fall, (i. e., during a season of low prices,) that, instead of availing himself of the advantages about him, he drifts along with the wind, becoming impoverished by neglect and the consequent inferior quality of his stock. When prices advance, he is found so far in the background that he is unable to recruit and regain his loss without much additional expense, and then not until low prices have again overtaken him.

2. It was believed that the breeding of all the various breeds of swine having distinction should be encouraged, as deterioration would most likely follow if confined to but one or two of the most popular.

3. The best modes of treating sows before and after farrowing was believed to be, to give them food that would create a supply of milk

for the young. Immediately after farrowing but little food should be given, except some simple drink, and for several days thereafter judgment should be used in feeding, giving food in moderate quantities until the pigs are a week old, when a more liberal amount may be given, and continue to increase it in proportion to the wants of the sow, always teaching young pigs to eat as soon as possible.

4. Young pigs, after weaning, should have the best of care, and the best food should be given them. Milk, sweet or sour, with a little meal, or oats and corn ground together, would be excellent if properly fed. Young pigs will thrive well upon this kind of food, allowing them plenty of exercise. A fine and successful breeding animal was probably never reared by keeping it continually confined to a small pen.

5. It was believed that more profit could be realized by turning pigs into market at the age of from nine to fourteen months, than at any other age.

6. What plan of feeding should be adopted to secure the greatest amount of profit? This will depend upon circumstances. First, the price of grain; second, the expense of grinding; third, the cost of feed. If the two latter requirements can be cheaply done, it may be made a source of profit. If too expensive, shelled and soaked corn will pay much better than to feed corn in the ear. Ground and cooked feed will make more pork for the amount of corn consumed, than if fed in its raw state or in the ear. But there may be instances, where corn is very cheap and grinding and cooking expensive, that it will not pay. Upon these questions every farmer or pork-raiser must be his own judge, as the circumstances that surround him in different localities differ so widely.

7. Disease among hogs and its cure, was considered. Upon this subject but little interest was manifested, although reports came in of the destruction of many by disease during the year 1871. But all remedies thus far tried as a cure have usually failed, and the almost universal expression was that if you find a diseased animal among your herd, it is best to "knock him in the head," and get him out of the way as soon as possible. Instead of looking for a remedy to cure those that are sick, it would be better to look for the cause of the disease, and prevent its further inroad. It is the opinion of many that most diseases among animals can be attributed to the want of good care and management It should also be remembered that fine buildings do not always indicate good care. A pen well covered with coarse, wild hay, and kept clean, where the pigs are regularly fed and watered,

will do more to forward the growth of pork than all the fine buildings you can put over them. Success in breeding hogs, or in general pork-making, does not rest with the style of architecture of the piggery (although proper respect should always be paid to matters of this kind) so much as upon the general management, good sense, energy and judgment of the owner. A reasonable amount of attention paid to these things will prevent many losses which may occur by disease or otherwise.

The thanks of the Association were extended to Mr. A. M. Garland, Secretary of the State Agricultural Society, for the use of the room in which to hold our meeting, aswell as other courtesies—after which the meeting adjourned.

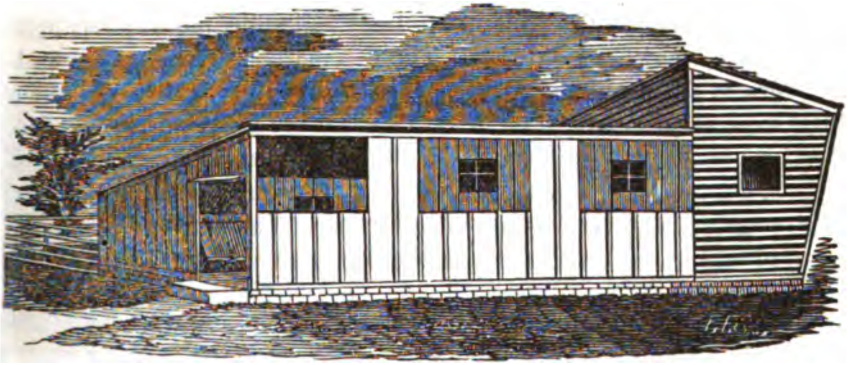
As a branch of Agriculture the rearing and culture of Swine occupies a very important place, and has become a matter of vast importance to the people of the United States, as well as Great Britain and many other portions of the civilized world—a very large proportion of which are either consumers or producers, and a large proportion have more or less capital employed in this branch of Agriculture, or in some way dependant upon its success. Hence the necessity that breeders should advance to the greatest possible degree the standard of excellence, not relaxing their efforts during a season of low prices, but, on the contrary, to redouble them and improve the quality of their stock, when it can be done cheaply. By so doing they not only overcome the embarrassment then existing, but when a season of fair prices again overtakes them, they are in a position to reap a valuable harvest.

It is an error, in which the American farmer is inclined to fall, that during a season of low prices he will promptly dispose of the class of stock upon which the pressure is felt, and purchase that which is apparently the most profitable, at high figures. To the latter there would be no particular objection, if he did not again make a similar change or sacrifice every few years, as to find him continually striving for success by purchasing his stock at the highest market and selling at the lowest.

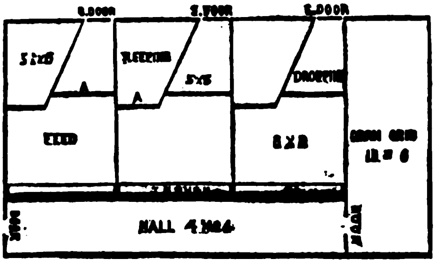
Would not a more regular and systematized plan of doing business pay much better, as all know that changes are continually taking place, so far as the prices of farm products are concerned. If you have paid high prices for stock and low prices have overtaken you before you have received returns, a little patience will put you all right. There will soon be a change in the barometer. Clouds will disappear and the sun will shine more brightly than ever. In the meantime do your duty in improving the quality of your stock, and there will be nothing to prevent you from reaping a fair reward. On the other hand, if you have allowed your stock to deteriorate in quality, in proportion to the price, you will again have the pleasure of starting in business at the lowest round of the ladder.

It is not our aim or expectation in these few lines to mark the pathway of success, and we feel ourselves incompetent to do so, if we were so inclined. Yet it is an old adage, that the simplest truths cannot too often be told. So, perhaps, in stock raising. Gentle reminders may be of some practical benefit. We hope, at no distant day, to see more unity of action on the part of the producing classes of this country; also, that little prejudices may be done away. There would then be no trouble about large ones. There should be a harmony of interest among all of the Agriculturists of the country. In a commercial point of view, the influence of all should be concentrated in such a way as to give strength and character to the calling. In politics the Farmer and Mechanic should watch their interests, as with our legislative bodies, to a great extent, will depend the success and prosperity of the Farmer as well as of the Nation. Our immense railroad corporations should not be allowed to pocket the entire profits of the earnings of the yeomanry of this country. This is a matter of vast importance to the Pork raisers of the West. Fortunes are being made annually from the profits of handling this product alone. All honorable means should be used to put down and keep within the bounds of reason and justice, anything that tends to oppress and retard the natural progress of Agriculture. To accomplish these results, there seems to be a necessity for an association of interests, a comparison of notes, and general balancing of accounts at least once a year. Subjects of this nature might, very appropriately, come before the Winter meeting of this Association. There should be some concert of action upon matters of this character, as well as upon the question of rearing, breeding and management of Swine, or stock of any kind. It is a subject which comes home to every producer and consumer in the land, and without the influence of this vast Board of Equalization, encroachments of a serious nature might follow. Would it not be well at the annual meeting of this Association to take up subjects of this character and discuss their bearing upon the varied propositions which may be presented for consideration?

THE MODEL PIGGERY.



The above engraving illustrates the model of a Piggery, exhibited by Horace R. Wood, Esq., of Frankfort, Will county, Illinois, at the Winter meeting of the Illinois Swine Breeders' Association, 1871. It was awarded the $100 premium offered by the Association.



The building is 9 feet high in front, 4 feet at rear, 16 feet wide, with 18 feet roof. Corn crib, 6 feet at base, 8 feet at top, 16 feet long, 12 feet high. The reader will observe the swing door over the trough in hall, which moves back and fastens with the bolt, giving a chance to clean out trough and to feed.

Back of sleeping pen is a window, from which to throw out the manure. The portion between sleeping pen and dropping pen is 3 feet high; the heavy black lines running across represent sticks, 2x4, nailed upon the floor, as marked A.

The windows in front are hung on weights, to move up and down, with a small sash of 4 lights in the centre; size of window, made of boards, 4½x6 feet. This allows the sun to penetrate the whole pen.

The engraving, itself, will probably furnish other explanations needed.

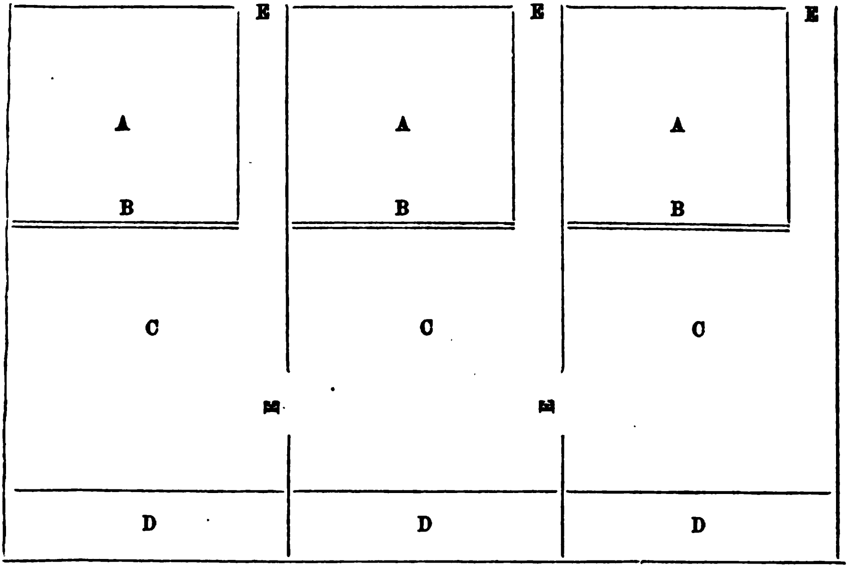
The advantages claimed in this piggery are as follows, viz: No wastage in lumber; needs no carpenter to construct it; can be made any length desirable; and is equally adapted to the rearing as well as fattening of swine. The windows in front will allow more or less light and air, as the owner may wish. The pen marked "feed," is for feeding corn in the ear. That part marked "dropping," is covered with a little fresh earth, to insure the result when the pen is first occupied. At the rear of this pen is a S. door (swing door), made of common boards, hung nearly upon the center, and is continually closed, and allows egress and ingress without hindrance. The building can be set upon pins or stone foundations, as the owner may desire.

A MODEL PIGGERY,

By CHARLES SNOAD, Joliet, Will County.

In the cut on the following page we have aimed to present a plan of a simple, cheap and practical Piggery.

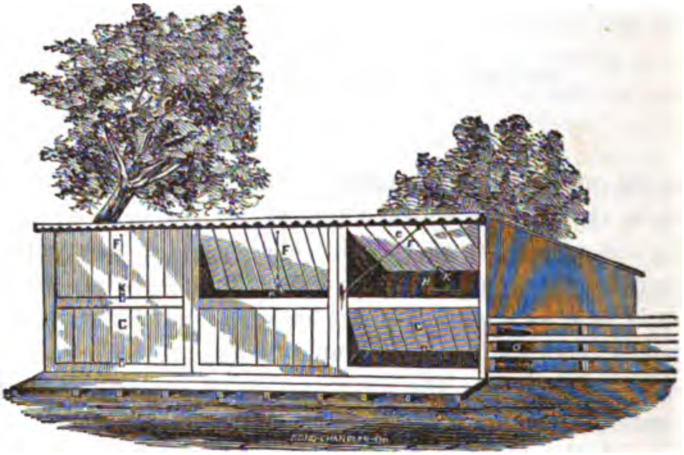
During the autumn of 1870 I built one upon this plan, and find it well adapted for the purposes intended. The plan of feeding is not particularly new, as the swing doors have been in use for several years with various modifications. The upper doors, we believe, were first suggested by ourselves. The advantage to be derived by their use is a more uniform temperature, admitting either sunshine or shade, in accordance with the wants of the animals, as these doors can be left at any inclination that may be deemed advisable. In summer it can be



Ground plan of Piggery.

DESCRIPTION OF GROUND PLAN.—A, A, A, sleeping department. B, B, B, 2 x 4 strip nailed to the floor. C, C, C, feeding floor. D, D, D, trough. E, E, E, door.

so adjusted as to shade the entire pen, and at the same time afford complete ventilation. In winter, during cold storms, or whenever it is necessary, it can be closed up perfectly tight. While during bright clear days, even when the thermometer is at °, or below, with doors thrown entirely up, the bright rays of the sun will shine into the pen, adding greatly to the thrift and comfort of the inmates, giving them increased vigor and strength to resist extreme changes.



Front Elevation.—F, F, F, upper swing doors with pulleys. G, G, G. lower swing doors over trough. H, H, window on north side. K, buttons 12 inches in length to fasten doors.

Dark, cold, damp Piggeries are a nuisance to any farmer or pork raiser, and failure is bound to follow their long continued use. We do not wish to be understood that we would keep pigs confined any great length of time, but, on the other hand, would allow plenty of range and exercise. But at certain seasons of the year it is frequently necessary to confine them in pens for several weeks. It is then, in particular, that we need comfortable quarters for them. The expense of this building, where several pens are put up at one time, is from $10 to $12 each, with lumber from $17 to $22 per M., without including labor, which can be performed by any farmer that can use the saw and hammer. The roof is of stock boards, grooved on both edges, and battened with half-inch stuff, six inches wide. Pulleys, with ropes, are attached to the upper swing doors, with buttons placed so that you can fasten them wherever you please, with the inside partition running from the back door to the center of the pen. Cold wind or storm is prevented from blowing in upon the stock with door left open. The floor is of inch boards, and will last for a number of years, or nearly as long as plank. The joist may be 2 x 6 or 2 x 8, the latter requiring less underpinning.

In presenting the foregoing plan, we simply represent that which we have in practical use, and find that it answers a good purpose. It seems to be adapted to general feeding, as well as breeding. It is not patented, and if there is anything in it of value to the farmer, pork raiser or breeder, they are cordially invited to adopt it, or such parts as to them may seem desirable.

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FOURTH ANNUAL REPORT OF THE

BOARD OF TRUSTEES

OF THE

ILLINOIS INDUSTRIAL UNIVERSITY

FOR THE YEAR 1870–1.

"The great advantage of directing education towards the pursuits and occupations of the people, instead of wasting it on dismal verbalism, is that while it elevates the individual, it at the same time gives security for the future prosperity of the nation."—*Lyon Playfair, Address on Education.*

"That man, I think, has had a liberal education, who has been so trained in youth that his body is the ready servant of his will, and does with ease and pleasure all the work that, as a mechanism, it is capable of: whose intellect is a clear, cold, logic engine, with all its parts of equal strength, and in smooth working order: ready, like a steam engine, to be turned to any kind of work, and spin the gossamers as well as forge the anchors of the mind: whose mind is stored with a knowledge of the great fundamental truths of nature and of the laws of her operations: one who, no stunted ascetic, is full of life and fire, but whose passions are trained to come to heel by a vigorous will, the servant of a tender conscience: who has learned to love all beauty, whether of nature or of art, to hate all vileness, and to respect others as himself."—*Huxley, on a Liberal Education.*

STANDING COMMITTEES.

I.

Executive.—The Regent, Pickrell, Brown, Cobb, Goltra, Lawrence, Griggs, Pearson, Cunningham.

II.

Auditing.—Lawrence, Wright, Blackburn, Galusha, Mahan.

III.

Finance.—Cobb, Hayes, Griggs, Bowen, Scroggs.

IV.

Faculty and Study.—Regent, Bateman, Pickard, Hayes, Slade, Edwards.

V.

Agricultural Department.—Pickrell, Blackburn, D. A. Brown, Harrington, Scott.

VI.

Horticultural Department.—A. M. Brown, Pullen, Galusha, Wright, Edwards.

VII.

Military Department.—Brayman, Anderson, Scroggs, Wright, D. A. Brown.

VIII.

Mechanical Department.—Pearson, Greenleaf, Bowen, Harrington, Goltra.

IX.

Buildings and Grounds.—Goltra, Van Osdel, Cunningham, Greenleaf, Scott.

X.

Library and Cabinet.—Bateman, Slade, Griggs, Pullen, Van Osdel.

XI.

By-Laws and Rules.—Mahan, Pickard, Anderson.

XII.

State of the Institution—Pickard, Slade, D. A. Brown.

OFFICERS AND MEMBERS OF THE BOARD OF TRUSTEES.

Hon. JOHN M. GREGORY, LL.D.,
PRESIDENT.

Hon. WILLARD C. FLAGG,
CORRESPONDING SECRETARY.

Professor EDWARD SNYDER,
RECORDING SECRETARY.

JOHN W. BUNN, Esq.,
TREASURER.

MEMBERS EX-OFFICIO.

Hon. JOHN M. PALMER, *Governor.*
Hon. NEWTON BATEMAN, LL.D., *Sup't of Public Inst.*
DAVID A. BROWN, *President State Agricultural Society.*
JOHN M. GREGORY, LL.D., *Regent of University.*

MEMBERS APPOINTED BY GOVERNOR AND SENATE.

NAME.	DISTRICT.	POST OFFICE.	COUNTY.	TERM EXPIRES.
Anderson W. B.	11th Congressional	Mt. Vernon	Jefferson	1877
Blackburn, Alexander	9th “	Macomb	McDonough	1875
Brayman, Mason	2d Grand Division	Quincy	Adams	1873
Bowen, G. S.	3d “	Chicago	Cook	1877
Brown, A. M	13th Congressional	Villa Ridge	Pulaski	1875
Cobb, Emory	3d Grand Division	Kankakee	Kankakee	1873
Cunningham, J. O.	2d “	Urbana	Champaign	1877
Edwards, Samuel	5th Congressional	La Moille	Bureau	1875
Galusha, O. B.	5th “	Morris	Grundy	1877
Goltra, M. C.	10th “	Jacksonville	Morgan	1873
Greenleaf, L. L.	3d Grand Division	Chicago	Cook	1877
Griggs, C. R.	2d “	Urbana	Champaign	1873
Harrington, R. B	8th Congressional	Pontiac	Livingston	1877
Hayes, S. S.	3d Grand Division	Chicago	Cook	1873
Johnson, John S	4th Congressional	Warsaw	Hancock	1875
Lawrence, L. W	2d “	Belvidere	Boone	1877
McMurray, L. B.	1st Grand Division	Effingham	Effingham	1871
Mahan, Isaac S	1st “	Centralia	Marion	1875
Pearson, John M.	12th Congressional	Godfrey	Madison	1877
Pickard, J. L.	1st “	Chicago	Cook	1875
Pickrell, J. H.	2d Grand Division	Harristown	Macon	1877
Pullen, Burden	1st “	Centralia	Marion	1877
Scott, James R.	7th Congressional	Champaign	Champaign	1877
Scroggs, J. W.	2d Grand Division	Champaign	Champaign	1873
Slade, James P.	1st “	Belleville	St. Clair	1875
Van Osdel, J. M.	3d “	Chicago	Cook	1873
Wagner, D. C.	3d Congressional	Shannon	Carroll	1877
Wright, Paul R.	1st Grand Division	South Pass	Union	1875

BOARD OF TRUSTEES.

BY-LAWS, AS AMENDED AND REVISED.

I. MEETINGS OF THE BOARD.

SECTION 1. All meetings of the Board of Trustees shall be held at the University building, in Champaign county, and a majority of all the Board shall constitute a quorum.

SEC. 2. The annual meeting shall be held on the second Tuesday in March.

SEC. 3. Special meetings may be called, whenever necessary, by the Regent, Corresponding Secretary or any five members of the Board, by mailing to each member of the Board, or personally serving a copy of such call, at least ten days before the day of meeting, provided, that in such notice the business to be attended to at such meeting shall be specified.

II. ORDER OF BUSINESS.

SECTION 1. The order of business, at each meeting of the Board, shall be:

1. Reading of the Scripture, and prayer.
2. Calling the roll of members.
3. Reading, correction and approval of minutes of last meeting.
4. Reports of the Executive Committee of all business transacted since the last meeting of the Board
5. Reception and consideration of communications.
6. Reports of officers.
7. Reports of standing committees.
8. Reports of special committees.
9. Unfinished and new business.

III. RULES OF DEBATE.

SECTION 1. In discussion, and the disposition of business, the Board shall be governed by the parliamentary rules and usages usually governing deliberative bodies.

Provided, That every motion, or resolution, contemplating any disbursement from the funds of the University, shall either emanate from, or be referred to, some standing committee, before final action thereon.

SEC. 2. Every resolution offered, shall be reduced to writing, and sent to the Secretary's table.

SEC. 3. No member shall speak more than ten minutes, or more than twice, upon any proposition, without the consent of the Board.

IV. OFFICERS AND APPOINTEES OF THE BOARD.

The officers of the Board shall consist of the Regent, Treasurer, Corresponding Secretary, and Recording Secretary; and the Board may, from time to time, appoint such professors, tutors or instructors, and such subordinate officers and employés, as they may deem necessary to carry on the institution.

V. TERMS OF OFFICE.

SECTION 1. The Regent and Treasurer shall be elected at each biennial meeting, and hold their offices for two years, and until their successors are elected and qualified.

SEC. 2. The Corresponding and Recording Secretaries shall be elected at the annual meeting, and hold their offices for one year, and until their successors are elected and qualified.

SEC. 3. Professors, and other officers and employès, shall be appointed at such time, in such manner, and for such term, as the Board shall, by resolution, in each case, direct, and be subject to removal at the pleasure of the Board.

VI. DUTIES OF REGENT.

SECTION 1. The Regent shall be the President of the Board of Trustees, and of all the several Faculties of the University; may vote on all questions or propositions submitted to the Board, and, upon calling any member to the chair, may participate in debate.

SEC. 2. He shall be the chief executive officer of the Board, and shall see that the orders and resolutions of the Board are carried into effect, when the Board shall not otherwise direct; and shall take care that the by-laws and regulations relating to the duties of subordinate officers, instructors and students, are faithfully observed.

SEC. 3. He shall be the Chairman of the Executive Committee, and as such shall report, at each meeting of the Board, the doings of the Committee since the last session of the Board.

SEC. 4. He shall also, as Regent, make an annual report to the Board, exhibiting the progress and condition of the several departments of the University, with such suggestions as he may deem needful for their improvement.

VII. TREASURER.

The Treasurer shall give bond, with approved security, in the sum of three hundred thousand dollars. He shall be the custodian of all moneys and securities belonging to the University, except such as are, by law, placed in the custody of the State, and of the land scrip, until the same shall be sold or located. He shall invest the funds of the University, as directed by the Board, and he shall pay no money out of the treasury, except upon a warrant of the Regent, countersigned by the Recording Secretary. He shall, also, annually, and oftener, when required, make a detailed report to the Board of all receipts and disbursements, since making his last report.

VIII. CORRESPONDING SECRETARY.

The Corresponding Secretary shall perform the duties indicated and required by the act creating his office. He shall hold his office in the University building as soon as the Institution is opened.

IX. RECORDING SECRETARY.

SECTION 1. The Recording Secretary shall perform the duties required him by law, and usually appertaining to his office. He shall keep the books and papers belonging to his office, at the University building, at Champaign, and the same shall be open to the inspection of any member of the Board, or officer of the University. He shall be the clerk of the Executive Committee, and, as soon as the University is open, reside at or near thereto.

SEC. 2. He shall countersign all warrants on the Treasurer, and note on each the date of the order of the Board or Executive Committee authorizing the issuing of the same.

X. SALARIES.

The salary of each officer, professor, instructor and other employè of the University, shall be fixed by resolution at the time the appointment is made, subject to alteration in the discretion of the Board; and a warrant shall be drawn for the same, according to law, on the Treasurer, as the same shall fall due, provided there are funds in the treasury to pay the same.

Salaries shall be payable quarterly, on the first days of April, July, October and January, of each year.

XI. DISABILITIES OF MEMBERS.

No Trustee, except as provided in the charter, shall receive any salary or compensation (except actual expenses) for services as an officer, or while acting under any appointment of the Board; nor shall any Trustee be interested in any contract made with, or on behalf of, the Board: *Provided*, That this section shall not apply to any of the present officers or appointees of the Board.

XII. STANDING COMMITTEES.

At the annual meeting, the following standing committees shall be appointed :

1. An Executive Committee, consisting of the Regent and eight members.
2. An Auditing Committee, of five members.
3. A Finance Committee, of five members.
4. Committee on Faculty and Study, of Regent and five members.
5. Committee on Agricultural Department, of five members.
6. Committee on Horticultural Department, of five members.
7. Committee on Military Department, of five members.
8. Committee on Mechanical Department, of five members.
9. Committee on Buildings and Grounds, of five members.
10. Committee on Library and Cabinets, of five members.
11. Committee on By-Laws and Rules, of three members.
12. Committee on the state of the Institution, whose duty it shall be, at stated times in each year, to visit the University, and examine thoroughly into the method of teaching in the various departments, and upon the progress of the students, and the general efficiency of the discipline, and report to the Board at each meeting.

XIII. DUTIES OF EXECUTIVE COMMITTEE.

SECTION 1. The Executive Committee shall meet, at the seat of the College, at least quarterly, and oftener if they shall find it necessary, for the transaction of any business necessary to be done in the vacation of the Board.

SEC. 2. The Executive Committee shall, for the purposes for which they were appointed, possess all the powers of the Board : *Provided*, That they shall not revise or change the acts of the Board, nor act upon any matters referred to any committee of the Board, that may be entrusted with any special business; shall not purchase or sell real estate, nor the land scrip, nor bonds belonging to the University, without the consent, in writing, of a majority of all the members of the Board, and shall be strictly confined to such business as cannot be left till the annual meetings of the Board.

SEC 3. The Committee shall hold their office till the annual meeting next after their appointment; and they shall submit the minutes of their proceedings, or make a report through their Chairman, to every meeting of the Board, of all their transactions since the last meeting of the Board.

SEC 4. Special meetings of the Executive Committee may be called in the same manner as special meetings of the Board.

XIV. AUDITING COMMITTEE.

The Auditing Committee shall examine and report upon all accounts of the Regent and the Treasurer, and audit all accounts referred to them by the Board or Executive Committee.

XV. FINANCE COMMITTEE.

The Finance Committee shall have the general supervision of the financial affairs of the University, subject to the rules and control of the Board. They shall make to the Board, at the annual meetings, a statement of the condition of the finances of the University, and an estimate of the income from all sources, and of its necessary and probable outlay for the succeeding year. And they shall report at all other meetings of the Board and of the Executive Committee, when required, and shall recommend such measures for the management of the revenues as they may think best.

XVI. COMMITTEE ON FACULTY AND COURSE OF STUDY.

The Committee on Faculty and Course of Study shall recommend, from time to time, suitable persons for positions in the Faculty, in its various departments, and all necessary changes or modifications in the course of study.

XVII. DUTIES OF COMMITTEES ON DEPARTMENTS.

The Committee on Agricultural, Horticultural, Mechanical and Military Departments, shall attend to the several subjects indicated by the titles of the committees. They shall recommend all measures necessary for the advancement of the interest of the various departments.

XVIII. COMMITTEE ON BUILDINGS AND GROUNDS.

The Committee on Buildings and Grounds shall consider and report upon all plans, estimates or proposals for the sale or exchange, repair or improvement of the buildings or grounds belonging to the University, or for the erection of buildings or fences on the same, and for their convenient division; and all orders of the Board for improvements on buildings and grounds (except the farms) shall be under the charge and control of the Committee.

XIX. COMMITTEE ON LIBRARY AND CABINETS.

The Committee on Library and Cabinets, of which the Regent shall be one, shall consider and report upon all matters relating to the care and arrangement of the library and cabinets. They shall have charge of the purchase and exchange, under the direction of the Board, of all cabinet materials, books, pamphlets, periodicals or specimens. They shall report, from time to time, the condition of the library and cabinets, and their future wants.

XX. COMMITTEE ON RULES AND BY LAWS.

The Committee on Rules and By-Laws shall prepare and recommend, from time to time, by-laws for the government of the Board in its business, and rules for the management of all departments of the University.

XXI. AMENDMENTS OF BY-LAWS.

These By-Laws may be repealed or amended, at any meeting of the Board, by a vote of a majority of all the members of the Board.

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FOURTH ANNUAL CIRCULAR

OF THE

ILLINOIS INDUSTRIAL UNIVERSITY.

URBANA, CHAMPAIGN COUNTY.

1870–71.

OFFICERS AND INSTRUCTORS.

JOHN M. GREGORY, LL.D.,
Regent, and Professor of Philosophy and History.
WILLIAM M. BAKER, M. A.,
Professor of English Language and Literature.
A. P. S. STUART, M. A.,
Professor of Theoretical and Applied Chemistry.
STILLMAN W. ROBINSON, C. E.,
Professor of Mechanical Science and Engineering.
THOMAS J. BURRILL,
Professor of Botany and Horticulture.
COL. S. W. SHATTUCK, M. A.,
Professor of Mathematics.
CAPT. EDWARD SNYDER,
Professor of Military Tactics and Book-keeping, and Instructor in German.
JAMES BELLANGEE, M. S.,
Teacher of Architectural and Mechanical Drawing.
HENRY M. DOUGLASS,
Assistant Teacher of Languages.
ROBERT B. WARDER, B. A.,
Assistant in Chemical Laboratory.
IRENÆUS D. FOULON, B. A.,
Teacher of French.
DR. H. J. J. DETMERS, V. S.,
Lecturer on Veterinary Science.

NON-RESIDENT PROFESSORS.

DR. MANLY MILES,
Professor of Agriculture.
E. S. HULL, M. D., Alton,
Lecturer on Vegetable Physiology and Fruit-Growing.
PROF. DON CARLOS TAFT,
Teacher of Geology.

HENRY M. DOUGLASS, Librarian.

ASSISTANTS IN FARM, GARDEN AND SHOP.

Alexander Thomson, C. E.,
Foreman of Machine Shops.
Thomas Franks,
Florist.
H. K. Vickroy,
Orchardist and Gardener.
E. L. Lawrence,
Head Farmer.

CATALOGUE OF STUDENTS FOR THE YEAR 1870–1.

Note.—The figures in the "Year" column indicate, not the year in the courses, but the years of attendance, many of the students having entered with advanced standing.

Names.	Course.	Year of attendance.	Residence.	
			Post Office.	County.
Adams, William W	Mechanical	1	Urbana	Champaign
Adams, George C		1	Fairmount	Vermilion
Aldrich, Jashub W	Horticultural		Tiskilwa	Bureau
Allen, Darwin	Mechanical	2	Hampshire	Kane
Alvis, William W		1	Rural Retreat	Douglas
Ashby, Charles W		2	Battle Creek	Michigan
Atkinson, George R	Chemical	1	Paris	Edgar
Baker, Ira O	Civil Engineering	1	Mattoon	Coles
Barnard, D. Elroy	Agricultural	2	Manteno	Kankakee
Barrett, Benjamin		1	Champaign	Champaign
Beasley, Joseph T			Champaign	Champaign
Beebe, Nathaniel W	Civil Engineering	1	Forreston	Ogle
Bellangee, John L	Mechanical	1	Dover	Bureau
Boda, Henry	Mechanical	1	Nauvoo	Hancock
Brooks, Samuel P		1	Lyndon	Whiteside
Brown, Dillon S		1	Geneva	DeKalb
Bryan, John R	Agricultural	1	Xenia	Clay
Bunce, Vincent P	Agricultural	2	Versailles	Brown
Burtin, Louis T		1	Nauvoo	Hancock
Burten, Allen P	Agricultural	1	Urbana	Champaign
Burwash, Milo B	Agricultural	3	Champaign	Champaign
Burwash, Thomas	Agricultural	2	Champaign	Champaign
Campbell, L. Frank		2	Sparta	Randolph
Campbell, John P	Mechanical	1	McLanesboro	Hamilton
Cantrell, John E	Mechanical and Military	2	Lincoln	Logan
Carroll, William E		1	Tuscola	Douglas
Caukin, Eugene L	Architectural		Courtland	Michigan
Chandler, John	Military	1	Bourbon	Douglas
Chapman, Samuel S	Agricultural	2	Elvaston	Hancock

CATALOGUE—CONTINUED.

Names.	Course.	Year of attendance.	Residence.	
			Post Office.	County.
Chapman, Henry H	Agricultural	1	Elvaston	Hancock
Chase, Willis S		2	Chicago	Cook
Clark, Lot B	Agricultural	2	Elvaston	Hancock
Clendenin, Cassius C	Military	3	Morrison	Whiteside
Cleaveland, Harry		2	Nashville	Tennessee
Clevenger, Peter J		1	Hensley	Champaign
Coffin, Earl W		1	Oakland	Coles
Conkey, Aubert J	Agricultural	2	Homer	Champaign
Corson, Edward	Mechanical	1	Richland	Sangamon
Covington, Marcellus E		2	Havana	Mason
Columbia, Thomas B		3	Champaign	Champaign
Coykendall, Milton		1	Brushy Fork	Douglas
Craver, James C	Chemical	2	Jonesboro	Union
Crawley, John J		1	Tuscola	Douglas
Craig, Calvin		1	Liberty	Adams
Crayne, William H	Mechanical	3	Urbana	Champaign
Coats, Henry L	Civil Engineering	1	Nunda	McHenry
Cussins, James S	Mechanical and Military	1	Decatur	Macon
Curtis, Herbert J	Mechanical and Military	3	Warren	Jo Daviess
Davis, John J	Agricultural	3	Freeport	Stephenson
Davis, Taylor	Mechanical and Military	2	Bourbon	Douglas
Day, John H	Chemical	2	Nokomis	Montgomery
Day, James B	Agricultural	1	Carlinville	Macoupin
Dean, Charles A	Agricultural	3	Champaign	Champaign
Dillow, Daniel J		1	Dongola	Union
Dier, William A		1	Forreston	Ogle
Dowell, Wilson	Architectural	3	Lexington	McLean
Dore, Clarence F		1	Forreston	Ogle
Dowe, Arthur W	Civil Engineering	1	Rock Island	Rock Island
Drewry, Henry N	Civil Engineering	3	Mason	Effingham
Drewry, Ebenezer L		1	Mason	Effingham

Drake, James F	Agricultural	1	Belvidere	Boone
Dunning, Russel O	Horticultural	1	Jefferson	Cook
Dunlap, Burley A	Civil Engineering	1	Savoy	Champiagn
Dunlap, Murat M	Horticultural	1	Savoy	Champaign
Dunlap, Earnest S	Horticultural	2	Champaign	Champaign
Dunlap, Henry	Horticultural	2	Champaign	Champaign
Dunlap, Clermont D	Horticultural	2	Norwood	Cook
Dunlap, Warren	Civil Engineering	1	Keokuk Junction	Adams
Dunayski, Frank A	Agricultural	1	Danzig	Germany
Eaton, Herbert	Agricultural and Military	3	Philo	Champaign
Eaton, Earnest	Mechanical	3	Philo	Champaign
Edmunds, James R	Mechanical	2	Sonora	Hancock
Eiker, William M. D	Agricultural	2	Sparta	Randolph
Ellison, Theodore S	Agricultural	1	Marine	Madison
Ells, William C		1	Champaign	Champaign
Enos, Charles W	Agricultural	1	Marine	Madison
Estep, Haney C	Civil Engineering	1	Rantoul	Champaign
Evans, Jesse P	Agricultural	2	Flora	Clay
Elder, Joseph W	Mechanical	2	Marrissa	St. Clair
Faulkner, Watson		1	Champaign	Champaign
Faulkner, James		1	Clement	Clinton
Finger, Charles A		1	Marrissa	St. Clair
Fisher, George D	Agricultural	2	Bement	Piatt
Flagg, Alfred M	Military	3	Rochelle	Ogle
Folks, Willis K		1	Champaign	Champaign
Foster, Charles W	Agricultural	2	Scott	Champaign
Gardner, Willis S		2	Champaign	Champaign
Gabriel, Gregory		1	Armenia	Asia Minor
Graham, Charles P		3	Champaign	Champaign
Gregory, Samuel F	Chemistry and Military	1	Sandlake	New York
Gregory, Charles E		1	Rochelle	Ogle
Gridley, George N	Agricultural	2	Halfday	Lake
Goodspeed, James M		2	Urbana	Champaign
Guthrie, Charles H		1	Mt. Sterling	Brown
Hadsall, John E		1	Riley	McHenry
Hall, Walter O		1	Sugar Creek	Vermilion
Hammond, Orson W	Agricultural	2	Hanover	Jo Daviess
Hamilton, Robert G		1	Marrissa	St. Clair
Hatch, Miles F	Mechanical	3	Bliven's Mills	McHenry
Hatch, Fred L	Agricultural	2	Bliven's Mills	McHenry

CATALOGUE—CONTINUED.

Names.	Course.	Year of attendance.	Residence.	
			Post Office.	County.
Hays, Charles I	Horticultural	2	Bridgeport	Lawrence
Hays, Samuel J		1	Loda	Iroquois
Hennesey, Augustus L	Civil Engineering	1	Utica	La Salle
Hemphill, William H		1	Marissa	St. Clair
Herring, John H	Agricultural	2	Goshen	Indiana
Hesse, Clarence K	Architectural	2	Champaign	Champaign
Hidy, Henry B		2	Davis	Stephenson
Hill, Edgar L	Chemistry and Military	2	Watson	Effingham
Hook, Samuel H	Civil Engineering	2	Urbana	Champaign
Holmes, Charles B		1	Urbana	Champaign
Holmes, John E		1	Jordan's Grove	Randolph
Holton, Henry C		1	Danville	Vermilion
Hubbard, George W		2	Urbana	Champaign
Huey, Charles J	Mechanical	1	Clement	Clinton
Hungerford, Everett M		1	Loda	Iroquois
Ivers, John J		2	Champaign	Champaign
Jeffers, Charles P	Chemical	1	Lyndon	Whiteside
Jennings, Emmett F		1	Palermo	New York
Joerg, Rudolph	Mechanical	2	Kettle Creek	Pennsylvania
Johns, Robert		1	Pana	Christian
Jones, John S	Military	1	Tuscola	Douglas
Jones, Joseph H	Military	2	Edwardsville	Madison
Jones, Alward F	Mechanical	1	Monee	Will
Kennedy, David C	Mechanical	1	Clay City	Clay
Kennedy, William J. W		1	Clay City	Clay
Kilbourne, Perley P	Agricultural	1	Danville	Vermilion
Kirkpatrick, Marion F	Agricultural	2	Champaign	Champaign
Knapp, Albert J	Mechanical	1	Joliet	Will
Kraft, George W		1	Smithston	St. Clair
Lambert, Cyrus W	Mechanical	2	Rantoul	Champaign
Lefflar, John E	Mechanical	2	Batavia	Kane

		1	Sigel	Shelby
Lisk, Byron	Agricultural	2	Onarga	Iroquois
Love, S. Sharon	Agricultural	1	Philo	Champaign
Lufkin, George A.	Civil Engineering	1	Villa Ridge	Pulaski
Lyman, George H	Mechanical	3	Richland	Sangamon
Lynch, Edward	Civil Engineering and Military	3	Wapella	De Witt
Lyon, John L.	Chemical and Military	3	Chicago	Cook
Lytle, George W		1	Champaign	Champaign
Mann, Howard A.	Mechanical	1	Batavia	Kane
Matthews, James W		3	Mason	Effingham
Mathews, Wilson	Agricultural	1	Freeport	Stephenson
Marsters, Hezekiah E.		1	Rantoul	Champaign
Maxey, John F.		1	Mt. Vernon	Jefferson
McKinley, William B.		2	Champaign	Champaign
McKinley, Thomas	Agricultural	1	Champaign	Champaign
McDannell, Urillo S.	Civil Engineering	1	Rock Island	Rock Island
McCauley, John C.	Mechanical	1	Lincoln	Logan
Merrill, Warren	Agricultural	2	Astoria	Fulton
Michener, Levi W	Agricultural	2	Homer	Champaign
Miller, Charles W		1	Chicago	Cook
Miller, Benjamin C.		1	Carlinville	Macoupin
Miller, Robert W	Mechanical	1	Willow Hill	Jasper
Miller, Jesse	Mechanical	1	Willow Hill	Jasper
Minnich, William		1	Villa Ridge	Pulaski
Mingle, Charles J		1	Clyde	Whiteside
Moore, Edwin F.	Agricultural	3	Tolono	Champaign
Morris, John C. C.		2	Lincoln	Logan
Morrow, Andrew T	Mechanical and Military	1	Pittsfield	Pike
Mumper, William G.	Civil Engineering	1	Tuscola	Douglas.
Ness, Joseph		1	Rossville	Vermilion
Newby, Samuel M.		2	Mooresville	Indiana
Ockerson, John A.	Agricultural	2	Elmwood	Peoria
Pancake, George H	Mining Engineering	3	Mahomet	Champaign
Parker, Calvin E.	Civil Engineering	3	Philo	Champaign
Parker, George F	Agricultural and Military	2	Sonora	Hancock
Patch, Emery	Agricultural	1	Janesville	Wisconsin
Paton, John	Mechanical	1	Lincoln	Logan
Peadro, Benjamin F	Mechanical	1	Windsor	Moultrie
Perry, Edward E.	Agricultural	1	Beaufort	North Carolina.
Philips, Parley A.	Agricultural	2	Damascus	Stephenson

CATALOGUE—CONTINUED.

Name.	Course.	Year of attendance.	Residence.	
			Post Office.	County.
Phœnix, Samuel T	Chemical	1	Bloomington	McLean
Pickrell, William	Horticultural	1	Mechanicsburg	Sangamon
Platt, Franklin C	Agricultural	2	Warren	Jo Daviess
Porterfield, E. Newlan	Military	2	Sydney	Champaign
Prather, Frank	Mechanical	1	Decatur	Macon
Prather, Hamar S	Agricultural	1	Urbana	Champaign
Prickett, Charles M		1	Ringwood	McHenry
Proudfit, Samuel M		1	McLeansboro	Hamilton
Rader, Adolphus L		2	Bristol	Tennessee
Rafferty, James N		1	Vermilion	Edgar
Raymond, Isaac S		3	Champaign	Champaign
Reiss, Willis A	Civil Engineering	3	Belleville	St. Clair
Reynolds, Stephen A	Civil Engineering	3	Belvidere	Boone
Reynolds, Henry S	Military	2	Urbana	Champaign
Rice, Walter B	Agricultural	2	Champaign	Champaign
Richards, Geo. B	Horticultural	1	Seneca	McHenry
Richner, George W	Mechanical	1	Blue Ridge	Piatt
Rickard, Thomas E	Military	3	Springfield	Sangamon
Ricker, N. Clifford	Agricultural	2	La Harpe	Hancock
Rieger, William V	Agricultural	2	Beaufort	North Carolina
Riley, Ozias		2	Urbana	Champaign
Robbins, H. Edward	Mechanical	2	Wenona	Marshall
Robbins, S. Volney	Mechanical	1	Wenona	Marshall
Robinson, Elna A	Mechanical	1	Janesville	Wisconsin
Rolfe, Charles W		2	Montgomery	Kane
Rutherford, Cyrus		1	Oakland	Coles
Salter, Rembrandt R	Military	1	Joliet	Will
Satterlee, Frank W		2	Batavia	Kane
Satterlee, Lewis A		1	Batavia	Kane
Short, Albert R	Chemical	1	Fairmount	Vermilion
Silver, Charles W	Agricultural	2	Urbana	Champaign

	Agricultural			
Singletary, Charles A	Mechanical	3	Urbana	Champaign
Sloan, Thomas B.	Agricultural	1	Macomb	McDonough
Smith, Ira W.	Agricultural and Military	2	Urbana	Champaign
Smith, Charles A.	Mechanical	1	Burlington	Kane
Soper, Hubell	Agricultural	1	Mt. Vernon	Indiana
Stayman, John M		1	Rantoul	Champaign
Stevens, Harmon G		1	Champaign	Champaign
Stevens, Francis A	Agricultural	1	Homer	Champaign
Story, George	Civil Engineering	1	Newton	Jasper
Stribling, Edgar N		1	Chicago	Cook
Swartz, Alexander C	Civil Engineering	1	Du Quoin	Perry
Swisher, Riley	Agricultural	3	Fairview	Fulton
Swyer, David E		2	Rossville	Vermilion
Tackaberry, Elijah	Agricultural	2	Belleville	St. Clair
Talbott, Charles W	Agricultural and Military	1	Dorset	De Kalb
Tate, Charles M		1	Harristown	Macon
Taylor, Wm. O.	Agricultural	1	Rushville	Schuyler
Teeple, Jared	Military	3	Decatur	Macon
Tennis, Israel W		1	Elgin	Kane
Terry, Theodore	Agricultural	1	Vermilion	Edgar
Terrell, James N	Agricultural	1	Otter Creek	Jersey
Thompson, Alonzo O	Agricultural	2	Belleville	St. Clair
Titus, William L.	Mechanical	2	Urbana	Champaign
Town, Henry L	Agricultural	2	Kane	Greene
Towle, Irvin B.	Civil Engineering	2	Batavia	Kane
Trowbridge, Silas	Mechanical	2	Urbana	Champaign
Tyndale, Hector H	Mechanical	1	Decatur	Macon
Walker, Edwin G	Mechanical	2	Springfield	Sangamon
Warder, Walter		2	Monroe City	Missouri
Weston, Charles		1	Vienna	Johnson
Wells, Daniel T		1	Champaign	Champaign
Wharton, Jacob N	Civil and Mg. Engineering	3	Rural Retreat	Douglas
Wharry, Walter W	Chemical and Military	1	Bement	Piatt
White, Wallace	Mechanical	1	Sycamore	De Kalb
White, Alfred		1	Olney	Richland
Whitcomb, Alonzo L	Chemical	2	Buckley	Iroquois
Whitcomb, Alva H		1	Urbana	Champaign
Whitney, Albert S		2	Urbana	Champaign
Whitney, Lewis C		1	Sydney	Champaign

CATALOGUE—Continued.

Names.	Course.	Year of attendance.	Residence.	
			Post Office.	County.
Wilcox, Albert C.		1	Alton	Iowa
Williams, Charles A.		2	Peoria	Peoria
Williams, Louis E.	Agricultural	1	Perry	White
Williams, James A.		3	Urbana	Champaign
Winkler, Joseph	Mechanical	1	Oakland	Coles
Winn, George L.		1	Woodstock	McHenry
Wood, Reuben O.	Military	3	Woodburn	Macoupin
Wood, Abraham D.		1	Woodburn	Macoupin
Woods, H. Chester		1	Sterling	Whiteside
Wright, Frank E.	Civil Engineering and Military	1	Arcola	Douglas
Yeazel, Abraham	Agricultural	2	Homer	Champaign
Young, Horace D	Civil Engineering	1	Gilman	Iroquois
Baker, Ella S.		1	Champaign	Champaign
Chase, Ella		1	Champaign	Champaign
Cheever, Alice		1	Champaign	Champaign
Coffeen, Sadie		1	Sidney	Champaign
Canine, Frances		1	Champaign	Champaign
Detmers, Jennie H. M.	Chemical	1	Champaign	Champaign
Douglas, Sarah M.		1	South Richland	New York
Field, Ella		1	Champaign	Champaign
Fillmore, Delia M.		1	Champaign	Champaign
Goodwin, Frances E.		1	Urbana	Champaign
Gregory, Mary E.		1	Champaign	Champaign
Gregory, Helen B.		1	Champaign	Champaign
Ivers, Mary A.		1	Champaign	Champaign
Kellogg, Flora L.		1	Champaign	Champaign
Osgood, Anna		1	Urbana	Champaign
Potter, Adelia F.		1	Champaign	Champaign
Romine, Mary		1	Urbana	Champaign
Rankine, Lucy M.		1	Rantoul	Champaign

Raymond, Jennie		1	Champaign	Champaign
Rea, Margaret A		1	Urbana	Champaign
Summers, Charlotte		1	Springfield	Sangamon
Whitcomb, Abbie		1	Urbana	Champaign
Whitcomb, Emma		1	Urbana	Champaign
Whitcomb, Mary		1	Urbana	Champaign

FEMALES, 24; MALES, 254; total, 278.

RECAPITULATION.

By Studies.

Agriculture	56	
Horticulture	9	
Agriculture and Military	4	
	—	69
Mechanics	37	
Civil Engineering	21	
Mining Engineering	1	
Civil and Mining Engineering	1	
Civil Engineering and Military	2	
Architecture	4	
Mechanics and Military	5	
	—	71
Chemistry	8	
Chemistry and Military	4	
	—	12
*Military		11
†Unassigned		115
		—
Total		278

By Counties, etc., Showing also the Counties not Represented.

Adams	2
Boone	2
Brown	2
Bureau	2
Champaign	86
Christian	1
Clay	4
Clinton	2
Coles	8
Cook	6
De Kalb	8
De Witt	1
Douglas	10
Edgar	8
Effingham	4
Fulton	2
Greene	1
Hamilton	2
Hancock	8
Iroquois	5
Jasper	8
Jefferson	1
Jersey	1
Jo Daviess	8
Johnson	1
Kane	9
Kankakee	1
Lake	1
LaSalle	2
Lawrence	1
Logan	4
Macon	5
Macoupin	4
Madison	3
Marshall	2
Mason	1
McDonough	1
McHenry	7
McLean	2
Montgomery	1
Ogle	5
Peoria	2
Perry	1
Piatt	3
Pike	1
Pulaski	2
Randolph	3
Richland	1
Rock Island	2
Sangamon	6
Schuyler	1
Shelby	2
St. Clair	7
Stephenson	4
Union	2
Vermilion	7
White	1
Whiteside	5
Will	2
	—
Total from Illinois, 59 Counties	259
Indiana	3
Iowa	1
Michigan	2
Missouri	1
New York	3
North Carolina	2
Pennsylvania	1
Tennessee	2
Wisconsin	2
	—
Total from other States, 9 States	17
Asia Minor	1
Germany	1
	—
Total Foreign Countries	2
Grand total	278

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*The students marked "Military" take the study of Military Science, besides their regular studies, whatever those may be.

†Students who have not yet selected their vocation, and are not therefore decided upon their course, as also all who are taking elective courses, are enumerated as "Unassigned."

HISTORY OF THE UNIVERSITY.

The Illinois Industrial University is both State and National, in its origin and relations. It was created by a grant from Congress, and its great leading aims were prescribed by a law of Congress. The State, accepting the grant and its conditions, founded the University, and further endowed it with the large donations received from the county in which it is located.

The public movement which gave rise to this University, began a quarter of a century ago. Public meetings of the friends of industrial education were held in all parts of the State, and numerous petitions, signed by thousands of the agriculturists and other industrial classes, flooded the State Legislature. At length, in 1857, the General Assembly adopted joint resolutions asking Congress to make grants of public lands to establish colleges for industrial education. After long discussions, Congress passed the necessary law in July, 1862, making the magnificent grant of public lands out of which has arisen that long list of Agricultural Colleges and Industrial Universities now scattered over the continent.

Illinois, the first to ask, was among the first to accept the grant, and great public interest was immediately excited in the question of its organization and location. Princely donations, in some cases of half a million of dollars, were tendered by several counties to secure the location of the institution in their midst. In February, 1867, a law was passed fixing the location and defining the plan of the University, and in May of the same year the Board of Trustees met at the University Building donated by Champaign county, and finally determined the location. During the year much of the scrip was sold or located, necessary alterations were made in the buildings, apparatus and library were purchased, a faculty partly selected, and preparations made for active work. The 2d day of March, 1868, the University was opened for students, and on the 11th of the same month formal inauguration exercises were held. In 1869, the Legislature appropriated $25,000 to the Agricultural Department for barns, tools, stock, etc., and $20,000 to the Horticultural Department for green house, barns, drainage, trees, tools, etc., besides $5,000 to Chemical Laboratory, and $10,000 for Library and apparatus. The present Legislature has lately appropriated $75,000 to begin the erection of a main building which is to cost $150,000; and $25,000 for a Mechanical Building and machinery, to include a large Drill Hall for the Military Department. Plans have been adopted and the erection of these buildings is to begin at once. The new Mechanical Building is to be ready for use at the opening of the Fall Term, and the walls of the main building are to be erected this year.

The University began in 1868 with *seventy-five* students. The number has rapidly increased, till now its catalogue shows a total number of *two hundred and seventy eight* in attendance during the year closing June 7, 1871. As fast as required, the several Departments have been organized, till at length all the great industrial classes are represented, including Agriculturists, Mechanics, Engineers, Miners, Architects, Chemists, Merchants and Publishers, and each class may find here the instructions necessary to the best understanding and performance of its work.

In the Autumn of 1870 the University was opened for the instruction of female students, and now it offers all its advantages to all classes of society, without regard to sex, sect or condition.

LOCATION.

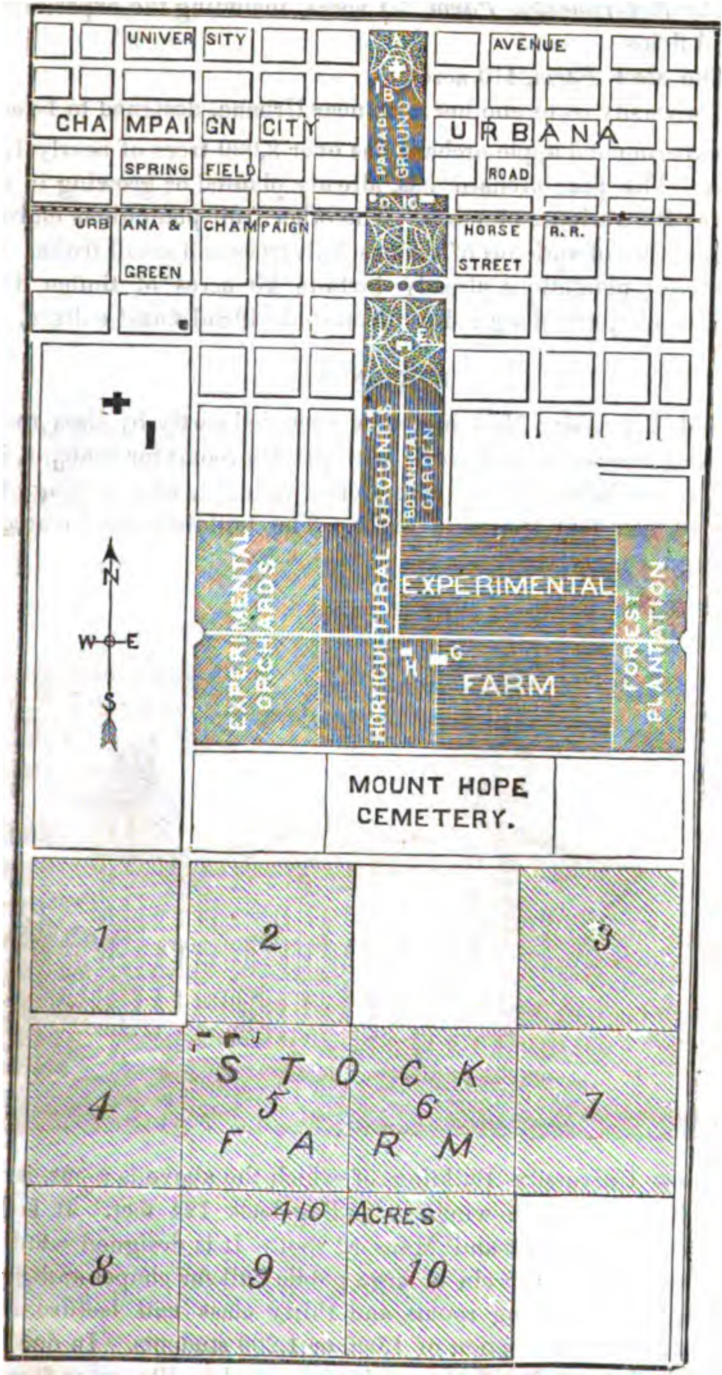
The University is situated in the city of Urbana, adjoining the limits of the city of Champaign, in Champaign county, Illinois. It is 128 miles from Chicago, on the Illinois Central Railroad. The new and splendid Indianapolis, Bloomington and Western Railway passes near the grounds. The county is one of the most beautiful prairie regions in the West. The two contiguous cities, constituting, really, only one community, have together a population of nearly 9,000, well supplied with churches and schools, and affording boarding facilities for a large body of students.

GROUNDS AND FARMS.

The lands occupied by the University embrace about 623 acres, divided as follows:

1. The *Campus*, about 13 acres, including ornamental grounds and a Military Parade ground.

2. The *Horticultural Grounds*, about 130 acres, embracing gardens, orchards, nurseries, arboretum and forest plantations.


UNIVERSITY AVENUE
CHAMPAIGN CITY
URBANA
SPRINGFIELD ROAD
PARADE GROUND
A
B
D
URBANA & CHAMPAIGN HORSE R. R.
GREEN STREET
F
HORTICULTURAL GROUNDS
BOTANICAL GARDEN
EXPERIMENTAL ORCHARDS
EXPERIMENTAL FARM
FOREST PLANTATION
H
G
N
W
E
S
MOUNT HOPE CEMETERY.
1
2
3
4
5
6
7
8
9
10
STOCK FARM
410 ACRES

3. The *Experimental Farm*, 70 acres, including the experimental plats and fields.

4. The *Stock Farm*, 410 acres.

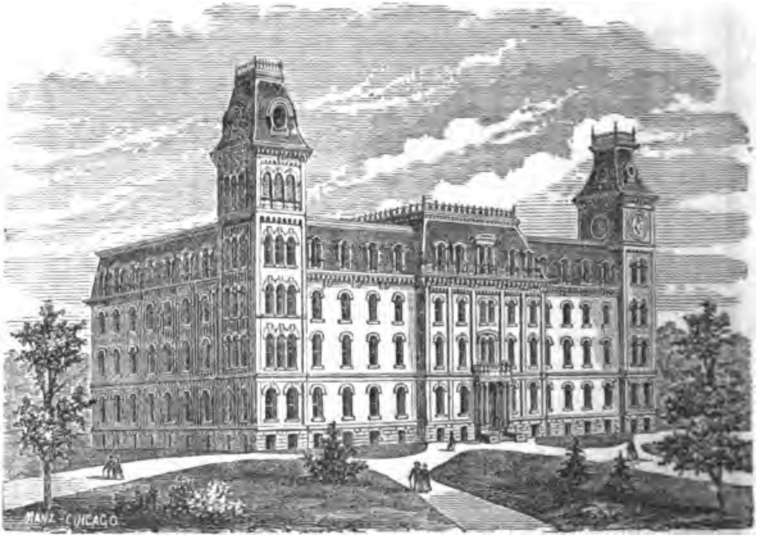
The University owns another farm near Urbana, designed to be sold.

The experimental apple orchard has over 3,000 trees of nearly 1,400 varieties. The pear orchard has, already planted or growing in nursery, over 400 varieties of pears. The other fruit plantations embrace a large number of varieties of various fruit trees and small fruits.

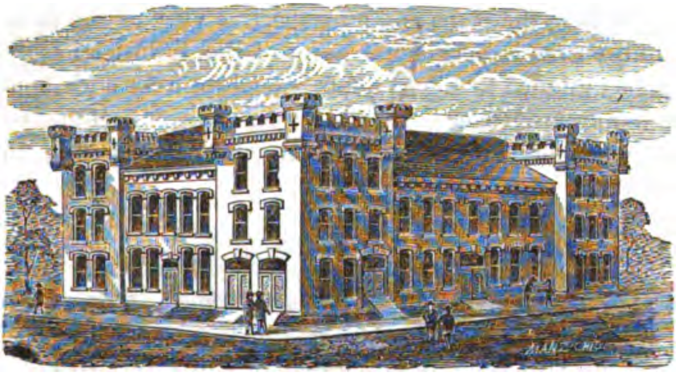
The forest plantations already include 20 acres of timber trees planted in rows, and designed to illustrate artificial forest culture.

BUILDINGS.

The old University Building, now occupied partly by class rooms, library and laboratory, and partly with private rooms for students, is of brick, 125 feet in length and five stories in hight, with a wing of 40 feet by 80 feet, four stories in hight. The building was donated by Champaign county.



The new University Building, of which the above is a cut, is to be 214 feet in length, with wings extending back 124 feet. It is three stories beside basement and Mansard roof. It is designed wholly for public use, and will contain a large public hall for chapel and general exercises, large drawing rooms and thirty class and lecture rooms, sufficient for the instruction of 1,000 or 1,200 students. In one wing, to be made fire-proof, will be provided a spacious library and reading hall, and large and commodious rooms for museums of Natural History and the useful arts. Several large rooms for literary societies will also be provided in the Mansard story. The building is surmounted by companile towers for clock and bells.



The new Mechanical Building and Drill Hall is to be built this summer and to be ready for use in September. It will be of brick, 128 feet in length by 80 feet in width, two stories in hight, with towers three stories in hight, as shown in above perspective view. It will contain a boiler and forge room, a machine shop, furnished with steam engine, lathes, and other machinery; pattern and finishing shop, and shops for carpentery, cabinet work, wood working machinery, paint rooms, printing rooms, draughting rooms, and rooms for models, finishing, etc.

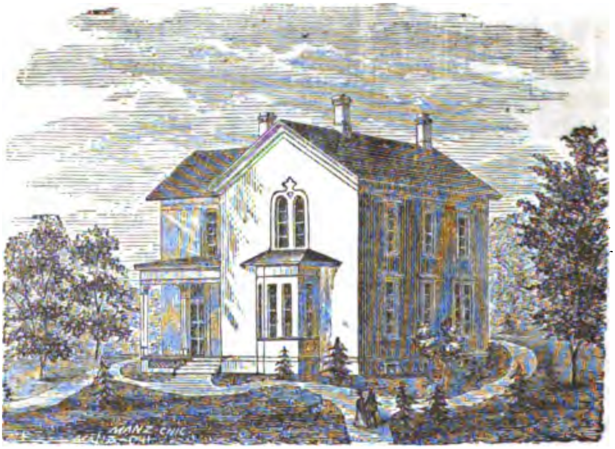
In the second story will be a large drill hall, 120 feet by 60 feet, sufficient for the evolutions of a company of infantry, or a section of a battery of field artillery. On the ground floor of one of the towers will be an armorer's shop, a band room, officer's rooms and a military model room.

The new Green House, shown here, is 70 feet by 24, exclusive of wing containing potting, seed and furnace rooms. There is, besides, another green house 12 feet by 35 feet.

The Veterinary Stables and operating rooms are to occupy the building heretofore used as shops. It is provided with a good yard and sheds, and will be fitted up for practical instruction in the care and treatment of sick animals during the winter clinic.

The University has three barns belonging to the stock and experimental farms and gardens, and three dwelling houses for the superintendents.

We present here the plans and a perspective view of the farm house recently built on the Experimental Farm of the Industrial University. This house is designed to afford a fair model for a farmer's house. It is tasteful in appearance, economical in cost, and compact and convenient in arrangement. We offer it as another contribution to rural architecture.

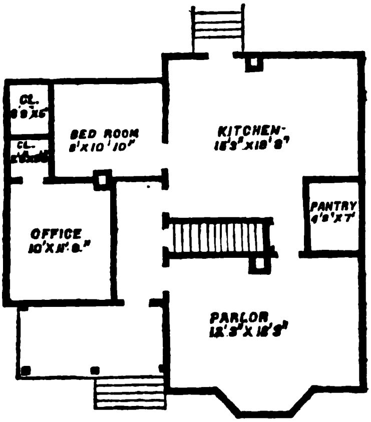


Downing recognized the truth that a house should be in keeping with the scenery by which it is surrounded. One would build a very different style of house among the rugged hills of New England from that which would be appropriate on the prairies of Illinois. The house here shown is not so marked in style as to demand surroundings of any extreme type. If well set off by clumps of conical evergreens, or of tall and branching elms, it will look well on the prairie. The dimensions of the several rooms are given in the plans.

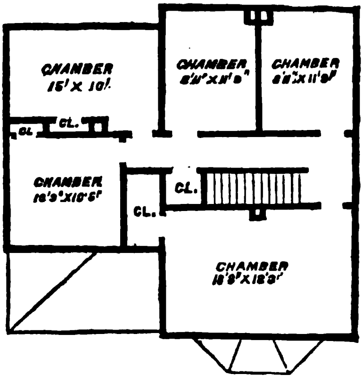
A cellar under the whole, walled with hard brick and having a cement floor, affords a laundry, a large cistern and an ample cellar, in two compartments, one of which may be given to dairy uses and the other to vegetables

The front door is sheltered by a pleasant verandah, and the front hall or entry affords direct admission to office, parlor and kitchen. The "office," a small room which the intelligent farmer will find abundantly useful for his business affairs, will also serve as a library and reading room on wet days, and in the evenings. The "parlor" is a spacious apartment, and rendered doubly pleasant by the bay window. The "kitchen" is also of good size, as many farmers' families make this the "living room," as they call it, where the cooking and eating are both done and the family work goes on. A lean-to, serving as a summer kitchen, and well room, has been added since the building was first erected.

A glance at the second floor will show a goodly number of sleeping rooms, all but two of which are supplied with good closets. There is room both for the farmer's own family and for the largest force he will need to employ in the hay and harvest fields.



First Floor.

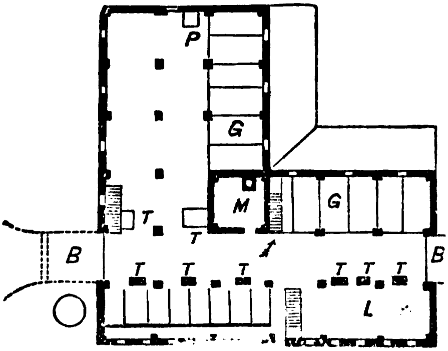


Second Floor.

The entire cost of the house, furnished, and well painted outside and in, was about $2,500. The summer kitchen was added afterwards, and was not included in the above amount.

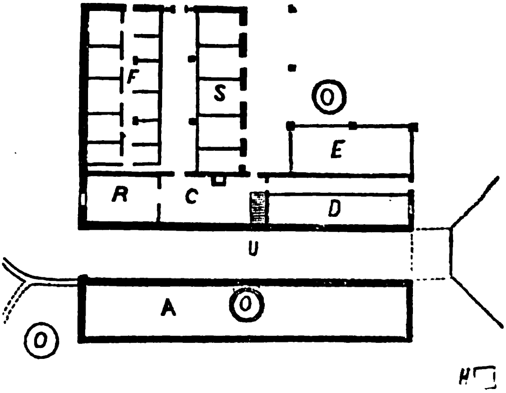
Perspective of Barn.

We present at foot of preceding page the perspective, and below the plans of the basement and first floor of the Barn recently erected on the Stock Farm of the Industrial University. The barn has a north and west front of 80 feet each Each limb, or ell, is 40 feet wide. It is of the kind known as a side hill barn.



Main Floor.

In the *basement plan*, the space marked A is under the horse stalls and has a concrete bottom, sloping towards the cistern, O, designed to catch the liquid manures. The space marked U is a manure pit, open at both ends and sloping to the center with concrete bottom. R is a root cellar. C, the cook room, to be furnished with a steam boiler to steam food, and to run a small engine to furnish power for grinding, threshing and cutting. D is a set of hog pens, and E another set of pens or yard under the shed which extends along both sides of the barn in the angle. S represents a set of bull stalls for the several breeds. S, a series of stalls for fine breeding cows, with calf pens in the rear of each. O O shows the place of the large cisterns taking the water from the roofs. H shows location of the hay scales.



Basement Plan.

In the plan of the first floor, B B are bridges. T T T show trap doors in the rear of horse stalls to allow droppings to be thrown into manure pit. L shows a series of box stalls for breeding mares. G G grain bins. M a harness room. P a large ventilating tube or flue, leading from cattle room below to the cap above the roof. There are doors in the sides of this flue, through which hay can be thrown down for feeding the cattle.

Above the main floor are ample hay lofts.

The foundation walls are of heavy stone work.

PROPERTY AND FUNDS.

Besides the lands and buildings already described, which are with furniture, library, etc., valued at $216,000, the University owns 25,000 acres of well selected wild lands in Minnesota and Nebraska. It has also endowment funds, invested in State and county bonds, amounting to $364,000, besides other property and avails valued at $50,000.

LIBRARY.

The Library, which has been carefully selected to aid the scientific studies required in the several practical courses, includes now about 5,000 volumes, and an appropriation of $10,000 has just been made by the General Assembly for its increase. The large Library Hall is fitted up as a reading room, and richly provided with American, English, French and German papers and periodicals, embracing the most important scientific and art publications, monthlies, quarterlies, etc. The reading room, well warmed and lighted, is open every day and evening, and is constantly resorted to by the faculty and students. The following are some of the periodicals regularly received by the library:

AGRICULTURAL.

Agronomische Zeitung, (German.)
American Agriculturist.
American Bee-keeper's Journal.
Bonham's Rural Messenger.
California Farmer.
Carolina Farmer.
Central Union Agriculturist.
Chemische Ackersman, (German.)
Colman's Rural World.
Cultivator and Country Gentleman.
Farmer's Union.
Fruit Grower.
Hearth and Home.
Journal for Landwirtschaft, (German.)
Journal of Agriculture.
Kansas Farmer.
Landwirtschaft Versuchstation, (German.)
Massachusetts Ploughman.
Michigan Farmer.
National Live Stock Journal.
North Western Farmer.
Ohio Farmer.
Prairie Farmer.
Rural Home Visitor.
Rural New Yorker.
Southern Cultivator.
Southern Planter and Farmer.
Western Farmer.
Western Rural.
Willamette Farmer.

EDUCATIONAL.

Michigan Teacher.

HORTICULTURAL.

Gardener's Monthly.
Horticulturist.
Southern Gardener.
Tilton's Journal of Horticulture.

MECHANICAL.

American Builder.
Architectural Review.
Manufacturer and Builder.
Scientific American.
Van Norstrand's Eclectic Engineers Magazine.
The Workshop.

CHEMISTRY AND NATURAL SCIENCE.

American Naturalist.
American Journal of Microscopy.
Annalen der Physik, (German.)
Comptes Rendues, (French.)
Zeitschrift Annalen Chemie, (German.)

LITERARY.

Blackwood's Magazine.
Edinburg Review.
London Quarterly.
North British Review.
Westminster Review.
Revue des Deux Mondes, (French.)
The Nation.

NEWS.

Centralia Sentinel.
Champaign County Gazette.
Champaign Union.
Chicago Evening Post.
Illinois Democrat.
Illinois Staats Zeitung, (German.)

AIMS OF THE UNIVERSITY.

> "Its leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life."—*Act of Congress* 1862, *Sec.* 4.
>
> "The Trustees shall have power to provide the requisite buildings, apparatus and conveniences; to fix the rates of tuition; to appoint such professors and instructors, and establish and provide for the management of such model farms, model art, and other departments and professorships, as may be required to teach, in the most thorough manner, such branches of learning as are related to agriculture and the mechanic arts, and military tactics, without excluding other scientific and classical studies.—*Act of General Assembly* 1867, *Sec.* 7.

In accordance with the two acts above quoted, and under which the University is organized, it holds as its principal aim to offer freely the most thorough instruction which its liberal means will provide, in all the branches of learning useful in the industrial arts, or necessary to "the liberal and practical education of the industrial classes, in the several pursuits or professions in life." It includes in this, all useful learning—scientific and classical—all that belongs to sound and thorough scholarship.

It aims to make the *fields of learning free to all*, and *all free*, that whoever comes may learn what he wills.

It aims also to *make learning practical.* It would avoid the endless, and often useless study of books—of countless words and theorizings—and unite theory and practice, making books subservient to the practical knowledge of things. In its methods it employs the hand and eye, as well as the brain of the student, to the fullest extent, and seeks to fit him to *act* as well as to *think.*

Its practical aims will be best understood by a survey of the following departments of instruction, for which it offers the best facilities :

1. *Scientific Agriculture*, embracing Soil Culture in all its varieties, and for all crops, Animal Husbandry, Stock breeding, feeding, etc., Veterinary Science, Agricultural Chemistry, Rural Engineering and Drainage of lands.

2. *Horticulture*, including Market Gardening, Fruit Growing, Management of Nurseries, Forests, Green Houses, Propagating Houses, and Ornamental Grounds.

3. *Mechanical Engineering*, Theory and practice in construction of machinery, pattern making and working in iron and brass. Study of the Motors, Strength of Materials, and Mechanical Drawing.

4. *Civil Engineering*, including Land and Government Surveys, Railroads, Canals, Bridge Building, Topographical Surveys and Leveling.

5. *Mining Engineering*, embracing Mine Surveys, Sinking and Tubing of Shafts, driving of Adits, and methods of working; Assaying, Treatment of Ores, and Metallurgy.

6. *English Language and Literature*. A thorough and extended course in higher Grammar, Rhetoric, Criticism and Essay Writing, to fit students for editorial or other literary work, or teaching.

7. *Analytical Chemistry*. Chemistry applied to the Arts, Laboratory practice with reagents, blow-pipe, and spectroscope. A full course, to fit students to become Chemists, Druggists and Pharmaceutists.

8. *Architecture*. Architectural Drawing, Styles of Building, Plans, Materials, Estimates, Ornamentation.

9. *Military Tactics*. Manual of Arms, Squad, Company and Battalion Drill, Brigade and Division Evolutions, Bayonet and Sword Fencing, Military Arms, Roads and Fortifications.

10. *History and Social Science*, Political Economy, Rural and Constitutional Law.
11. *Mental and Moral Philosophy*, and Logic.
12. *Modern and Ancient Languages*. French, German, Latin and Greek.
13. *Commercial Science*, Book Keeping, Commercial Law, etc.
14. *Mathematical Science*, Pure and Applied, Natural Philosophy, Astronomy.
15. *Natural History*, Botany, Zoology, Geology, Physical Geography.

FREEDOM IN CHOICE OF STUDIES.

The University being designed, not for children, but for young men and women who may claim to know something of their own wants, powers and tastes, *entire freedom in choice of studies*, is allowed to each student, subject only to such necessary conditions as the progress of the classes, or the convenience in teaching, requires. It is not thought useful or right to urge every student, without regard to his capacity, taste or practical wants, to take entire some lengthened curriculum, or "course of studies." Liberty every where has its risks and responsibilities as well as its benefits—in schools as well as in society; but it is yet to be proved that compulsory scholarship is necessarily better, riper and more certain than that which is free and self-inspired. Each student is exhorted to weigh carefully his own powers and needs, to counsel freely with his teachers, to choose with serious and independent consideration, the branches he may need to fit him for his chosen career, and then to pursue them with earnestness and perseverance, without faltering or fickleness.

It is necessarily required: 1st, That students shall be thoroughly prepared to enter and keep pace with the classes in the studies chosen; and 2d, That they shall take these studies in the terms in which they are taught in course.

It is expected that each student shall have three distinct studies, affording three class exercises each day. But on special request to the Faculty, he may be allowed less or more, to meet the exigencies of his course.

No change in studies can be made after the beginning of a term, without permission of the Faculty.

It is recognized that students will often need advice in the selection of studies and in the arrangement of a proper course. To meet this need the Faculty have carefully arranged several courses of studies which may be wisely followed by those who have no special reasons for diverging from them.

Due care will be taken to prevent, as far as possible, all abuse of the liberty of choice. Students failing to pass satisfactory examinations in their chosen studies, will not be permitted to remain and take other studies without a vote of the Faculty.

DEPARTMENTS AND COLLEGES.

Heretofore the courses of instruction have been exhibited only under the headings of the several Departments. It is found desirable, in order to afford a clearer view of the actual work of the University, to add the sub-divisions into Colleges. This implies no change in the character or plan of the University, but only the adoption of a usage now common in the American Universities, to exhibit more impressively the several courses of studies.

A Department embraces a single branch of study, taught usually by a single professor and his assistants, as the Department of English Literature, or of Mathematics.

A College includes a combined course, made up of the several branches needful for some one calling or profession. Thus, in the older universities, there were Medical Colleges and Law Schools, and in the new Industrial or Polytechnic Universities, are found Colleges of Agriculture, of Engineering, of Mechanical Science, etc.

Under the following several Departments will be found an exhibit of the nature and extent of the instruction afforded in each of the several branches of learning taught in the University. The student may learn from this the character of any branch and the time necessary to complete it.

Under the head of the several Colleges he will find marked out the course of studies needful to fit him for his chosen profession or pursuit. These studies are the same as those shown under the heads of the Departments, but each College embraces studies from several departments, taken not in full, but to such extent as the practical aim of the college course may require.

It is expected that each student will enroll himself in one of the colleges, though he may vary from the course of studies prescribed.

The course of studies, both in the Departments and Colleges, are subdivided according to terms and years, to meet the necessities of class teaching. The student is at liberty to take as many or as few of these terms of any particular study as his needs may require, or his time will allow, but the full course marked out will be found necessary to a complete mastery of the subject.

DEPARTMENTS OF STUDY.

AGRICULTURE.

This Department embraces a thorough course of instruction in the theory and practice of land culture and cropping in its several varieties; Animal Husbandry, including stock and dairy farming; Sheep and Swine Husbandry and the principles of stock breeding. It includes also the principles of the amelioration of soil, veterinary science, and the general management of farming estates. For a statement of the full course of sciences involved in Agriculture, see the article headed "College of Agriculture."

The following presents a full course in this Department:

FIRST YEAR—*The Farm.*—Its measurements and mapping; subdivisions—meadows, pastures, orchards, woodlands, gardens, etc. Fences, hedges, farm buildings. Soil—classification and mechanical treatment of soils, plowing, etc. Drainage. *Plant Culture*—Structure and physiology of plants; classes of the useful plants, their characteristics, varieties, and values. Wheat culture, maize culture, grass culture, root culture.

SECOND YEAR—*The Farm.*—Chemical elements and chemical treatment of soils. Fertilizers—their composition, manufacture, preservation and application. Climate; influence of light, heat and electricity on soils and vegetable growth. Farm implements—principles of structure and use. Road-making. Insects injurious to vegetation. Animal husbandry—breeds and varieties of neat cattle, horses, sheep and swine. Principles of breeding, rearing, training, fattening, etc. Chemical composition of food, and preparation of the several varieties. Sheep husbandry. Poultry. Bees. Veterinary surgery and medicine.

Third Year—*Agricultural Economy.*—Relation of Agriculture to the other industries and to Commerce. The several branches of Agriculture. Agricultural book-keeping—the farm-book, herd-book, etc. *Rural Law.*—Of tenures and conveyances of land, of highways, of cattle, of fences, of noxious weeds, etc. Laying out of large farming estates. Rural architecture and engineering. Foreign and ancient agriculture. History and literature of agriculture.

The instruction will be aided and illustrated with practical exercises on the experimental and stock farms, and in the management of fine and graded stock of several varieties. But it must be fully understood that it is no part of the business of the Department to teach the mere manual processes of plowing, hoeing, harvesting, etc., these can be learned in the employ of some good practical farmer, such as may be found in every township.

HORTICULTURE.

The studies in this Department will include the formation, management and care of gardens, hot-beds, propagating houses, green houses, nurseries, orchards, tree plantations and ornamental grounds. The instruction will be from text-books, and by lectures in the class room, together with illustrations and applications in the propagating and green houses, botanical garden and arboretum, and upon the vegetable and fruit grounds.

First Year—*First Term.*—Composition and classes of soils, with reference to their uses; fertilizers, vegetable physiology, and laws of growth of plants. *Second Term.*—Chemical treatment of soils; manufacture and application of manures; laying out and mapping of grounds. *Third Term.*—Mechanical treatment of soils. Drainage. Insects injurious to vegetation.

Second Year.—*First Term.*—Fruit growing. Planting and treatment of Orchards. Forest culture. *Second Term.*—Management of Nurseries. Propagating, grafting, etc. Plans of orchards, gardens, etc. Records. *Third Term.*—Management of market and vegetable gardens. Small fruit culture.

Third Year—*First Term.*—Construction and care of hot and green houses. Propagating house. Conservatories. Floriculture. *Second Term.*—Garden architecture. Ornamentation. Green house work. *Third Term.*—Landscape gardening. Ancient, and Foreign Horticulture.

MECHANICAL SCIENCE AND ENGINEERING.

The studies of this Department are intended to qualify young men for the designing, construction or superintendence of all kinds of machinery. It will embrace a thorough course of instruction in the principles of mechanical philosophy, of mechanical devices and the parts of machines, of pattern making, finishing and mechanical proportions, and of mechanical designing and drawing.

A very important element of mechanical training, too often overlooked, is that of shop practice. Many of the schools of mechanical engineering have met with but partial success from the neglect of this important element of instruction. Here practical instruction goes hand in hand with the study of theory, not for the purpose of teaching mere mechanic art, which can be learned in any of the thousand shops of the country; but to give a practical character and value to the instruction, and to teach more effectually the work of the mechanical engineer.

FIRST YEAR.—*First Term.—Drawing.* The use of draughting Instruments by the student in delineating various objects placed before him. Principles of Projection and Isometrical Drawing. Application of water colors in Finishing drawings by Tinting and Graining, *Second Term.—Descriptive Geometery.* Generation of lines and surfaces of single and double curvature; Graphical solution of various problems by the theory of Projections; Construction of Tin and Sheet Iron workers' patterns.

SECOND YEAR—*First Term.—Designing and Drawing.* Practice in making working drawings of Original Designs. Designing of Machines intended for specific purposes, the parts shaped, proportioned and arranged by the student. *Second Term. Shades, Shadows and Perspective.* Principle of Light and Shade; Use of Water Colors in giving actual external appearance. Projection of Shadows, representing objects as shown in direct light. Finished and Colored Perspectives or Pictures. *Practical Mechanics.* Shop practice in constructing Models or Machines from working drawings of the student's own design; Making Patterns for moulder's use; Moulding and casting brass and other metals; Bench work, filing. *Third Term—Practical Mechanics continued.* Shop practice in constructing machines and models. Study of cutting tools, such as Drills, Counterbores, Reamers' Turning Cutters or Tools, Revolving or Milling Cutters, Taps, Dies, Chasers, Knerls, Dial Plates for Gear Cutters, etc.

THIRD YEAR—*First Term.—Cinematics or Comparison of Motion.* Relative motion of points in any system of connected lines of pieces; motion, considered independent of force; velocity ratio. *Principles of Mechanism.* Cinematics applied to the investigation of the motion of different elementary parts of machines, such as friction wheels; curves in rolling contact; cams and curves in sliding contact; correct working gear teeth; gearing chains; escapements; link work; cylindrical, conical and double screws. *Second Term. Analytical Mechanics.* Equilibrium and resultant of forces; principle of moments and of virtual velocities; determination of "Center of Gravity"; support of bodies on inclined planes; friction considered in connection with motion of bodies upon surfaces; relation of force, time and space when bodies are projected in the air. Motion of rotating and vibrating masses. *Physics.* Properties of matter; liquids and gases; laws of falling bodies; Atwood's Machine; weight in different latitudes; molecular forces; elasticity and compressibility: theory of undulations and vibrations; musical instruments; light; solar spectrum and mode of ascertaining the composition of the Sun, stars and nebulæ. Correction of the aberration of lenses for microscopes, telescopes and other optical instruments. *Third Term—Analytical Mechanics continued.* Motion of Material points as constrained to move in given paths; amount and center of hydrostatic pressure upon surfaces. *Descriptive Astronomy*—Relative size and position of the Earth as compared with other heavenly bodies, and the movement among them; relative mass and density of the distinct bodies of the solar system; parrallax aberration and velocity of light; precession nutation; physical construction of the Sun, planets, comets, stars, nebulæ, etc. *Physics continued*—Heat. Intensity, quantity and effects, latent and specific heat; steam heating apparatus; ventilating and warming of buildings; heating power of fuel; mechanical equivalent heat. Magnetic dip, declination, variation, intensity, etc.; convertibility of magnetism and electricity; identity of lightning and the electric spark; proper form of lightning rods, electric telegraph.

Fourth Year—*First Term—Hydraulics, Pneumatics and Thermodynamics.* Flow of Liquids and Gases through orifices, weirs, pipes, and channels. Distribution of water and gas in cities. Machines for raising water. Effect upon temperature by sudden changes in the volume of a gas, as when expanding in engine cylinders, or in compressing air for motor purposes. *Strength of Materials.* Resistance of Beams, Pillars, etc., to flexure and rupture. Curve of Flexure. Maximum Deflection. Strength of Trusses. *Second Term—Prime Movers.* Work developed by Water-Wheels, Wind-Wheels, Steam, Hot Air and Electric Engines, relative economy, and efficiency. *Drawings. Complete Drawings of Machinery;* plans, elevations, sections and details, the same finished with line shading and water colors. *Third Term—Mill Work and Machinery.*—Heavy Machinery and its Foundations, for Mills and Factories. Manufacturer's machinery, engineer's machinery, etc. *Drawing.* Designing of Machinery, drawings and estimates.

CIVIL ENGINEERING.

The studies of this Department extend through four years. Those of the first three will prepare a student for undertaking many engineering operations, such as the building of railroads, canals, embankments, etc. The fourth year is intended for those who wish to fit themselves for the higher engineering constructions, such as the building of arches, trussed bridges, and supporting frames of all kinds.

First Year—*First Term.*—Projection drawing. [See Mechanical Department.] *Second Term.*—Descriptive Geometry. Representation and discussion of lines, surfaces, angles, etc., by their projections; Graphical solution of problems.

Second Year—*First Term.*—Surveying, chain, compass and transit instruments applied to land surveying; laying out, parting off and dividing up land; running perpendiculars and parallels; measuring inaccessible distances and angles; method of survey of the public lands of the United States. Leveling; measuring the difference of hight between two or more points. Maps and plats of surveys. *Second Term.*—Shades, shadows and perspective. [See Mechanical Department.] Topographical surveying and drawing. Surveys made with the transit and leveling instruments in the ordinary way, also by the more approved modern methods as adopted upon the government surveys of the United States, with the stadia, for the determination of hights above a datum plane of different points; location of contour lines passing through points of equal hight; field sketching, etc.

Third Year—*First Term.*—Roads and railroads. Preliminary surveys and final location of ideal roads by the actual use of engineer's instruments in the field; laying out on the ground of circular and parabolic railroad curves, turnouts, crossings, etc.; elevation of the outer rail, cuttings and embankments; plans, profiles, sections, etc. *Second Term.*—Analytical mechanics and physics. [See Mechanical Department.] *Third Term.*—Analytical mechanics and physics continued. [See Mechanical Department.] Also, three year students: Mahan's Civil Engineering. Building materials; results of experimental researches on strength of materials; masonry; framing; foundations; embankment walls; canal locks; sea-coast improvements.

Fourth Year—*First Term.*—Strength of materials. Tensile compressive and transverse strength and elasticity of steel, iron, wood and stone, when in the form of beams, pillars, etc. Hydraulics. Flow of liquids through orifices, weirs, pipes, canals, rivers, and the distribution of water and gas in cities. Practical Astronomy. Use of the sextant, transit, equatorial and zenith instruments in the determination of latitude and longitude, by the method of equal altitudes; circum-meridian altitudes; meridian transits, and any altitude of a star or the Sun. *Second Term.*—Stability of frames. Derivation of formulæ for the strength and stability of the various members of trussed frames of all kinds, such as trussed bridges and roofs; steel iron, and stone arches; stability of a wall sustaining a building, roof, pressure of water in dams, or pressure of earth in embankments. Construction drawing. Drawing of existing engineering constructions, with due regard to the most approved methods of uniting materials in structures. *Third Term.*—Stone cutting. Application of the theory of descriptive geometry and graphics to the determination of the dimensions and form of stone required in buildings; plain, groined, cloistered, skew, and other arches; lining for tunnels, etc. Geodesy. Determination of the figure of the earth; methods of conducting extended surveys of the earth's surface; ordinary methods of measuring base lines; method by the standard compensating rods of the United States Coast and lake surveys; running of standard meridians and parallels for government land surveys, etc. Drawing. Finished drawings of bridges and other structures.

MINING.

This Department embraces two branches of studies: 1st. Engineering operations; including mine surveys, the opening and working of mines, all mining constructions, etc., taught at present in the College of Engineering. 2d. The subjects of Mineralogy, Metallurgy, Assaying, treatment of ores, smelting, etc., as taught in the College of Chemistry. The course in Engineering and in Metallurgy will be found under the head of those two colleges.

ENGLISH LANGUAGE AND LITERATURE.

In the arrangement of the studies in this Department, the endeavor has been to present so thorough and extended a drill in grammatical and philological study, and in the authors and history of our language, as to afford the advantages, so far as may be, of the ordinary study of Latin and Greek.

The course is arranged to extend through three years, but it may be shortened according to the ability or needs of the student.

Instruction will be given by text books and lectures; and constant practice in essay writing, forensics, presentation of plans and criticisms, will be required. Public declamations, original or selected, and original essays, are required of every student at least twice a term, during his entire connection with the University.

First Year—*First Term.*—Punctuation; use of capitals; sources of the English language; principles of composition and essay writing. *Second Term.*—Primary rhetoric; advanced grammar; philological and grammatical analysis of modern authors. *Third Term.*—Advanced grammar; philological and grammatical analysis of Milton and other authors; history of their times and contemporaries.

Second Year—*First Term.*—Grammatical and philological analysis of Shakespeare and early dramatists; history of the times and contemporaries of Shakespeare. *Second Term.*—

Grammatical and philological analysis of Spenser, Gower, Chaucer, etc., and history of their times. *Third Term.*—History of English literature, essays and criticisms.

Third Year—*First Term.*—History of English and American literature, essays and criticisms. *Second Term.*—Rhetoric proper; invention; plans, etc. *Third Term.*—Elements of criticism; methods of philological study, etc.

GERMAN LANGUAGE AND LITERATURE.

This language being of quite practical value to the farmer and artisan of this country, it will be taught thoroughly in a two years' course. The first year aims to enable a student to read such German scientific works as his course demands. The second year completes the course, and makes the student thoroughly acquainted with the language.

First Year—*First Term.*—Worman's Complete German Etymology, to lesson 28. *Second Term.*—Etymology completed; Conversational Reader; German Echo commenced. *Third Term.*—Syntax; Reader completed.

Second Year—*First Term.*—Review of Etymology; Classic Reader. *Second Term.*—Review of Syntax; Schiller's William Tell; Gœthe's Iphigenia. *Third Term.*—Lectures on the German Language; conversation and composition; Schiller's Jungfrau von Orleans; reading of German papers through second and third terms.

Books for reference—Grimm's Deutsche Sprachlehre; Adler's Dictionary.

FRENCH LANGUAGE AND LITERATURE.

The course of instruction in French will extend through two years, but students who desire to pursue the language only far enough to enable them to read the scientific works which they may find it necessary to consult, are expected to acquire sufficient for this in a single year. The reading room is well supplied with French Agricultural and Scientific journals, and much of the best French literature.

First Year—*First Term.*—Etymology. Oral exercises in French pronunciation; written exercises in translating English into French. *Second Term.*—Etymology. Select readings; *conversazioni* weekly. *Third Term.*—Syntax. Translating; French composition; *conversazioni*, weekly.

Second Year—*First Term.*—Review of Grammar; classic French literature; *conversazioni*, weekly. *Second Term.*—Modern French Literature, novels, comedies, etc; *conversazioni*, weekly; composition. *Third Term.*—Modern French Literature continued; history of French Literature; written criticisms of French authors by the class weekly.

LATIN LANGUAGE AND LITERATURE.

Students will not be admitted to this department who are not prepared to enter at once upon the reading of Cicero.

First Year.—Orations of Cicero; Latin prose composition begun and continued through the course; selections from Virgil; Latin prosody.

Second Year.—Selections from Livy; Horace; Juvenal.

Third Year.—Cicero de Officiis; Cicero de Oratore; lectures on the origin and structure of the Latin language; Frieze's Quintilian Other authors will occasionally be substituted in the place of some of the above.

GREEK LANGUAGE AND LITERATURE.

This course will resemble that in the Department of Latin.

FIRST YEAR.—First three books of Xenophon's Anabasis; Herodotus; Greek prose composition begun and continued throughout the course.

SECOND YEAR.—Demosthenes; Thucydides; Homer's Iliad.

THIRD YEAR.—Xenophon's Memorabilio of Socrates. Selections from Plato and Greek poets.

Select portions of Smith's History of Greece will be read in course, and lectures given on Greek history and philosophy.

CHEMISTRY.

The full course in this Department will occupy four years, and is designed to make students at home in the applications of chemistry to agriculture, and the arts and manufactures; in a word, to make them thorough chemists.

FIRST YEAR—*First Term.*—Inorganic Chemistry and Chemical Physics. *Second Term.*—Organic Chemistry. *Third Term.*—Qualitative Analysis—detection of the alkalies, the alkaline earths, the earths, the metals, the mineral acids and the organic acids. Use of the blow-pipe and the spectroscope. Crystallography and Descriptive Mineralogy. Instructions on the subject will be given by lectures, and the students will have practice in determining minerals.

SECOND YEAR—*First Term.*—Qualitative Analysis—a series of substances for practice in the detection and separation of the elements. Practice in Mineralogy continued. *Second Term.*—Quantitative Analysis. Salts, minerals, ores, alloys, furnace products, etc. *Third Term.*—Quantitative analysis of soils, manures, ashes of plants and mineral waters.

THIRD YEAR—*First Term.*—Quantitative Analysis continued; assaying; volumetric analysis. *Second Term.*—Organic Analysis. Detection and separation of organic acids and bases, and other organic compounds. *Third Term.*—Quantitative Organic Analysis: 1st, of compounds containing carbon and hydrogen; 2d, of compounds containing corbon, hydrogen and oxygen; 3d, estimation of nitrogen, sulphur, chlorine, bromine and iodine in organic compounds.

FOURTH YEAR—*First Term.*—Preparation of chemicals. *Second Term.*—Chemistry applied to the arts of dyeing, bleaching, calico printing, electrotyping and photographing. *Third Term.*—Lectures on the manufacture of glass and porcelain, the smelting of ores; heating and illumination, etc.

ARCHITECTURE.

This Department is for the present appended to the College of Engineering. Its studies embrace many of those belonging to the course in Civil Engineering. They include, also, Architectural Drawing, the principles and styles of Architecture, the history of Architecture, and plans and estimates for buildings of all kinds.

NATURAL HISTORY.

FIRST YEAR—*Second Term.*—Structural and Physiological Botany. Form, arrangement, structure, morphology, growth and office of the leaves and flowers; forms, growth and office of the stem and root; cellular tissue, cell development, cell contents and cell transformations; structure, parts and uses of seeds and fruits, and the food, nutrition and repro duction of plants—the whole illustrated by living and dried specimens and drawings. Also enough of Systematic Botany to enable the general student to analyze the flowering plants, *Third Term.*—Botany in lectures: 1st, the natural orders, their extent, properties, uses and distribution; 2d, use of the microscope. Vegetable Physiology continued. Classification, distribution and reproduction of cryptogamous plants.

Second Year—*First Term.*—Systematic Botany. Practical examination and collection of the flowering and flowerless plants from all parts of the State, as far as practicable. Botanical excursions and surveys. Zoology. Principles of Zoology. Development, structure, classification and distribution of animals. *Second Term.*—Systematic Zoology in lectures: 1st, natural orders, families, etc.; 2d, Embryology and peculiar modes of reproduction; alternate generation; Comparative Anatomy as applied to classification. Collection and preservation of specimens, and Natural History of domestic animals. *Third Term.*—Entomology. Classification of insects; habits of those injurious to vegetation, with means of checking their ravages. Habits of beneficial species.

Third Year — *First Term.*—General Physiology. Comparative Anatomy. Geology. *Second Term.*—Principles of Geology. *Third Term.*—Lithological Geology. Sources and materials of mineral wealth; building stones; mineral veins. Palæontology.

Fourth Year—*First Term.*—Historical Geology. *Second Term.*—Physical Geography and Meteorology. *Third Term.*—Special Geology of Illinois. Method of conducting surveys. Practical excursions.

PURE MATHEMATICS.

The studies of this Department extend through eight terms. Those of the first six are, it is thought, what the general student will require; the seventh is considered necessary, and the eighth desirable for the engineer.

First Year—*First Term.*—Geometry, Davies' Legendre, i-v books; elementary principles, ratios and proportions, the circle and the measurement of angles, measurement and properties of polygons, area of the circle. *Second Term.*—Geometry, vi-ix books; planes; polyedral angles; the prism, pyramid, cylinder, cone and sphere, the properties and measurement of; area of a spherical polygon, of a lune; measurement of spherical angles. Algebra, Davies' Bourdon, chapters vi and vii; formation of powers; binomial theorem; extraction of roots of any degree; radicals of any degree; theory of exponents. *Third Term.*—Higher Algebra; series, properties and summation of; binomial theorem, general demonstration of; exponential quantities; logarithms; general theory of equations.

Second Year—*First Term.*—Trigonometry, plane, spherical and analytical; formation and use of tables; solution of right angled and oblique angled triangles; relations between the circular functions of any arc. *Second Term.*—Analytical Geometry; geometrical construction; point and right line on a plane; properties and measurement of the circle, ellipse, parabola and hyperbola; point, right line, plane and surface of revolution in space. *Third Term.*—Differential Calculus; differentials of algebraic functions of a single variable; Maclaurin's Theorem; Taylor's Theorem; differentials of transcendental functions; maxima and minima of functions of a single variable; equations of tangent and normal; expressions for sub-tangent, sub-normal, etc.; differentials of an arc, plane area, surface and volume of revolution. Integral Calculus; integration of monomials, of particular binomials, of rational fractions; applications in the rectification and quadrature of curves, in the quadrature of surfaces of revolution, and in the cubature of volumes of revolution.

Third Year—*First Term.*—Analytical Geometry; curves in space; discussion of the general equation of the second degree; discussion of the surfaces of the second order. Differential Calculus; differentials of functions of two or more variables; maxima and minima of functions of two or more variables; tendency of curves to coincide; osculatory curves; radius of curvature; evolutes and involutes; envelopes; construction and discussion of algebraic curves, the logarithmic curve, the cycloid, spirals; general surfaces; equations of tangent plane and normal line; partial differentials of a surface and of a volume. Integral Calculus; integration of the differentials of circular functions and of circular arcs; of certain irrational differentials; of differentials containing transcendental quantities; of the differentials of the higher orders; and of differential equations; rectification and quadrature of curves; cubature of volumes in general. *Second Term.*—Calculus of Variations. Method of Least Squares.

HISTORY AND SOCIAL SCIENCE.

The instruction in this Department will be given partly with text books, but chiefly by lectures, with systematic readings of specified authors, and daily examinations on the same. The study of historical geography will keep even pace with the history studied, and the chronology will be rendered as clear and distinct as possible. Written exercises on chronology, and essays in historical criticism, will constitute prominent features of the course.

First Year—*First Term.*—Discovery, settlement and colonial history of the United States, with notices of other American States; American geography. Two lectures (or lessons) a week. *Second Term.*—History of the United States from the time of the Revolution. Two lectures (or lessons) a week.

Second Year—*First Term.*—Ancient History of Greece and Rome, with notices of other ancient nations; ancient Geography. Five lessons (or lectures) a week. *Second Term.*—Mediaeval history. *Third Term.* Modern history—general European history: European geography. Five lessons (or lectures) a week. Political economy.

Third Year—*First Term.*—Constitutional history of England, and of the United States. Two lectures a week. *Second Term.*—History of Civilization; analysis of historical forces and phenomena; notices of the history of the arts and of the inductive sciences. *Third Term.*—Political philosophy; constitutional and international law.

COMMERCIAL.

The course in this Department will occupy one year, the first term of which will be occupied in teaching the principles of book-keeping in general; the second, their application to special lines of business, general business forms and papers, and the third, to the higher operations of a counting house, commercial law and political economy. Students who wish to prepare for a commercial career, and also acquire a general education, may extend this course through two or more years, by taking such collateral studies as their contemplated vocation may render desirable. Studies recommended for this purpose, would be: The English and German Languages, Mathematics, one or two terms of Chemistry (for druggists, etc.), and History.

First Term.—Book-keeping by single and double entry; theory of mercantile accounts, and the several principal and auxiliary books. Penmanship; commercial calculations.

Second Term.—Partnership accounts; commission and shipping; farm books; business forms and papers; notes, drafts, exchange, endorsements; bills of lading; accounts current; account sales; inventories, invoices, etc. Commercial correspondence.

MILITARY SCIENCE AND TACTICS.

This Department is organized under the provision of the Acts of the National and State Governments, requiring the instruction in Military Tactics. The Board of Trustees of this University have adopted the rule, that all students shall, unless excused for sufficient cause, take part in military exercise, as aggregation of numbers is a paramount necessity to render such instruction effective.

The instruction in this Department will be given in two sub divisions, arranged as follows:

1. *Practical instruction in Military Tactics* (for the present, confined to the infantry arm), to all able-bodied students of the University, comprising the following branches:

Manual of arms; squad and company drill; bayonet exercise; skirmish drill; battalion drill; guard and picket duty; evolutions of the brigade; target practice.

The exercises are confined to three hours' drill and instruction per week.

2. *Military Science.* There will be taught a class in Military Science and Art, as far as it is necessary for duties as officers of the line. Students will be admitted into this class after having participated at least two terms in the general military exercises, and shown such proficiency and ability as may secure a utilization of the instruction thus received.

The instruction, theoretical and practical, is to occupy not to exceed five hours each week, and is so arranged as not to interfere with any courses of study, and make it possible for the member of any other course to engage in it as an optional study.

The members of this class will officer the companies, and act as drill sergeants and instructors for the lower classes.

As collateral studies, for such as make this course a specialty, are recommended Mathematics and Surveying, English and Modern Languages, Drawing, one term of Chemistry, History and Political Economy.

First Year—*First Term.*—School of the company; bayonet fencing. *Second Term.*—Battalion and skirmish drill; Bayonet fencing. *Third Term.*—Brigade and division evolutions; target practice, and theoretical instruction on the rifle and fire arms.

Second Year—*First Term.*—Military administration; reports and returns; army regulations and military laws; Sword fencing. *Second Term.*—Outpost and picket duty (Mahon's); sword fencing. *Third Term.*—Military fortification, field and permanent; military bridges and roads; target practice.

Third Year—*First Term.*—Artillery practice; field artillery; drill at the cannon. *Second Term.*—Military Engineering; Cavalry tactics, theoretical. *Third Term.*—Art of War (Jomini); Military History and statistics; organization and administration of armies.

There is formed now a battalion of four companies, officered by the students of the military class, and battalion drill and skirmish drill were practiced last term.

PHILOSOPHY AND LOGIC.

The studies of this Department extend through the last year of the full courses, and are taught chiefly by lectures, with readings of specified authors and written essays. The course is as follows:

First Term.—Mental Philosophy. Analysis and classification of mental phenomena. Theories of perception; Imagination; Memory; Judgment; Reason; Intuition. The æsthetic. Phenomena of dreaming, clairvoyance, and insanity. Doctrines of the absolute and the unconditioned. The philosophy of education.

Second Term.—Moral Philosophy (three lectures a week). Theory of conscience; nature of moral obligation; moral feeling; the Right; the Good. Practical ethics; Duties. Formation of character. Logic, formal and inductive, (two lectures a week, alternating with Moral Philosophy).

Third Term.—History of Philosophy. Ancient schools of philosophy; Scholasticism; Modern schools of philosophy; Influence of philosophy on the progress of civilization, and and on modern sciences and arts. Inductive logic.

COLLEGE OF AGRICULTURE.

FACULTY.

THE REGENT, Professor of Political Economy.
DR. MANLY MILES, Professor of Agriculture.
T. J. BURRILL, Professor of Horticulture and Botany.
A. P. S. STUART, Professor of Chemistry.
EDWARD SNYDER, Professor of Agricultural Book-Keeping.
S. W. ROBINSON, Professor of Agricultural Machinery.
S. W. SHATTUCK, Professor of Agricultural Engineering.
D. C. TAFT, Professor, *pro tempore*, of Geology of Soils.
DR. H. J. DETMER, Lecturer on Veterinary Science.
HON. W. C. FLAGG, Superintendent of Agricultural Experiments.

The College of Agriculture has two Divisions, which, for convenience, are styled Schools:

1. The School of Agriculture Proper.
2. The School of Horticulture and Fruit Growing.

1.—THE SCHOOL OF AGRICULTURE.

The aim of this school is to educate scientific agriculturists. The frequency with which this aim is misunderstood by the community at large, demands that it shall be carefully explained. Many, looking upon agriculture as consisting merely in the manual work of plowing, planting, cultivating and harvesting, and in the care of stock, justly ridicule the idea of teaching these arts in a college. The practical farmer who has spent his life in farm labors, laughs at the notion of sending his son to learn these from a set of scientific professors. But all of this implies a gross misunderstanding of the real object of agricultural science. It is not to teach *how* to plow, but the reason for plowing at all,—to teach the composition and nature of soils, the philosophy of plowing, of manures, and the adaptations of the different crops and cultures. It is not to teach how to feed; but to show the composition, action and value of the several kinds of food, and the laws of feeding, fattening, and healthful growth. In short it is the aim of the true Agricultural College to enable the farmer to understand thoroughly and profoundly, all that men can know about soil and seed, plants and animals, and the influence of light, heat and moisture, on his fields, his crops, and his stock; so that he may both understand the reason of the processes he uses, and may intelligently work for the improvement of those processes. Not "book-farming," but a knowledge of the real nature of all true farming—of the great natural laws of the farm and of all its phenomena—this is the true aim of agricultural education. And when it is recollected that agriculture involves the principles of a larger number of sciences than any other human employment or profession, it will not be regarded as an unfit end of a sound collegiate training.

The instruction unites, as far as possible, Theory and Practice—Theory explaining Practice, and Practice illustrating and enforcing Theory.

Apparatus.—The College has for the illustration of Practical Agriculture, a large stock farm of 410 acres, provided with a large stock barn, fitted up with stables, pens, yards, cooking room, etc.; and fine stock of several breeds of neat cattle, sheep and swine are to be purchased at an early day. It is well supplied with farm machinery and tools.

There is also an experimental farm of about 70 acres, exclusive of orchards, etc. This is divided up into experimental plats and fields. A clinic for sick animals is held in the Fall or Winter Term, to furnish opportunity for the practical study of Veterinary Science. During the clinic, held last winter, nearly 60 diseased animals were presented for treatment, and the students took active part in prescribing for them.

Surveying and Drainage are illustrated by practice in the field. istry is pursued by work in the laboratory. Collections of seeds, soils, plants, implements, skeletons of animals, models and apparatus are provided to illustrate the several branches of Agricultural Science.

Admission.—Candidates must pass a thorough examination in Arithmetic, English Grammar, Geography and History, and in Algebra to equations of the 2d degree.

The recommended course, which follows, occupies four years:

FIRST YEAR. *First Term.*—Geometry, Chemistry, English or Latin History, 2 lectures a week. *Second Term.*—Botany, Chemistry, English or Latin History, 2 lectures a week. *Third Term.*—Botany, Analytical Chemistry, English or Latin.

SECOND YEAR. *First Term.*—Soils and Fertilizers, Vegetable Physiology, Trigonometry and Surveying, German or Chemistry. *Second Term.*—Plant Culture, Chemical treatment of Soils, Manufacture of Manures, Drawing and Mapping, Zoology, German or Chemistry, Physics. *Third Term.*—Mechanical treatment of Soils and Drainage, Entomology, German or Chemistry, Physics.

THIRD YEAR. *First Term.*—Fruit growing, Orchards, etc.; Comparative Anatomy and Physiology, French or History. *Second Term.*—Animal husbandry, breeding, etc.; Geology, French or History. *Third Term.*—Agricultural book-keeping, Farm records, etc.; Political Economy, French or History.

FOURTH YEAR. *First Term.*—Rural Economy and Rural Law, Mental Philosophy and Constitutional history, History of English and American Literature. *Second Term.*—Veterinary Surgery, Rural Architecture, Physical Geography and Meteorology. *Third Term.*—Landscape Gardening, History of Agriculture, Geology of Illinois, Inductive Logic and History of Philosophy.

2.—SCHOOL OF HORTICULTURE.

The aim of the School of Horticulture is to educate scientific horticulturists. Its course embraces such studies as are necessary to thorough mastery of gardening, fruit growing, and forestry.

Apparatus.—To give a practical character to the special studies of the course, the school is provided with ample horticultural grounds of about 130 acres, including 20 acres of forest plantations, 10 acres of ornamental grounds, several acres of nurseries, and large garden plats. It has an apple orchard of 3,000 trees of about 1,400 varieties, a pear orchard of nearly 400 varieties, and small fruits of many kinds. It has also two green houses well filled with rare exotics and flowering plants. It is supplied with the best garden machinery and tools. It has also many plans of ornamental grounds and parks.

Admission.—The conditions of admission are the same as those for the School of Agriculture.

The course of recommended studies is as follows:

FIRST YEAR. *First Term.*—Geometry, Chemistry, English or Latin; History, two lectures a week. *Second Term.*—Botany, Chemistry, English or Latin; History, two lectures a week. *Third Term.*—Botany, Analytical Chemistry, English or Latin.

SECOND YEAR. *First Term.*—Soils and Fertilizers, Vegetable Physiology, Trigonometry and Surveying, German or Chemistry. *Second Term.*—Plant Culture, Chemical treatment of

Soils, Manufacture of Manures, Drawing and Mapping, Zoology, German or Chemistry, Physics. *Third Term.*—Mechanical treatment of Soils and Drainage, Entomology, German or Chemistry, Physics.

THIRD YEAR. *First Term.*—Fruit growing, orchards, etc.; Comparative anatomy and physiology, French or History. *Second Term.*—Nursery plans and records, Geology, French or History. *Third Term.*—Vegetable garden and small fruits, Political Economy, Book-keeping, French or History.

FOURTH YEAR. *First Term.*—Hot and green houses, Rural Economy and Rural Law, History of English and American Literature. *Second Term.*—Rural Architecture, Physical Geography and Meteorology, History of Civilization. *Third Term.*—Landscape Gardening, Geology of Illinois, History of Philosophy and Inductive Logic.

COLLEGE OF MECHANICS AND ENGINEERING.

FACULTY.

THE REGENT.

S. W. ROBINSON, Professor of Mechanical Science and Engineering.

S. W. SHATTUCK, Professor of Mathematics.

A. P. S. STUART, Professor of Applied Chemistry.

ALEX. THOMPSON, Teacher of Railroad Engineering.

JAMES BELLANGEE, Teacher of Architectural Drawing.

This College, for the present, embraces the following Schools: 1st, the School of Mechanical Science and Engineering. 2d, the School of Civil Engineering. 3d, the School of Mining, and 4th, the School of Architecture.

1.—SCHOOL OF MECHANICAL SCIENCE.

The aim of this School is to fit students to become Mechanical Engineers, and to prepare them to invent, construct and manage all kinds of machinery. The instruction, while severely scientific, is also severely practical, and aims at a thorough understanding and mastery of all the mechanical principles and devices. Shop practice is required as a regular study in the course. The students of this department, under the direction of the Foreman, have manufactured a steam engine, several lathes, and many pieces of finely finished apparatus. They also have done a large amount of work for outside parties, including patterns for castings, models for the Patent Office, a heliotrope for the United States Coast Survey, several thermometer graduating machines, and some pieces of scientific apparatus for other institutions.

Several of the foregoing and some others were invented by the Instructors. Three patents have been allowed for the inventions made in this department during the past year.

Apparatus.—The new Mechanical Building, which is to be ready for occupancy at the opening of the Fall term, in September next, will have a large machine shop fitted up with a steam engine, with power and hand lathes for iron and brass, a planer, drilling machine, a lathe for wood turning, benches and vises for a large class of students. It will also contain a boiler and forge room, with forges and tools, and brass furnace; a carpenter's shop, with benches and sets of bench tools, lathes, buzz and jig saws, etc.; paint and printing rooms, and draughting, finishing and model rooms. The College has also good collections of apparatus for the illustration of the principles of Physics and Mechanical Science.

The following is the course of studies recommended:

First Year—*First Term.*—Geometry, Drawing, English or Latin, History, two lectures a week. *Second Term.*—Geometry and Algebra, Descriptive Geometry, English or Latin, History. *Third Term.*—Algebra, Botany, English or Latin.

Second Year—*First Term.*—Trigonometry, Designing and Drawing; Chemistry. *Second Term.*—Analytical Geometry; Shades, Shadows and Perspective, Shop Practice. *Third Term.*—Calculus, Shop Practice, Chemical Analysis.

Third Year—*First Term.*—Calculus, Principles of Mechanism, French or German, History. *Second Term.*—Analytical Mechanics; Physics, French or German, History. *Third Term.*—Analytical Mechanics and Astronomy, Physics, French or German.

Fourth Year—*First Term.*—Hydraulics, Pneumatics, Thermo-Dynamics, Strength of Materials, Geology. *Second Term.*—Prime movers and mill work, Complete Drawings of existing machines and tools; History of Civilization Logic. *Third Term.*—Mill work and machines; Complete Drawings, estimates and designs, Constitutional Law, or Political Economy, Inductive Logic.

2.—SCHOOL OF CIVIL ENGINEERING.

This school is designed to make good practical Engineers, thoroughly prepared for all branches of Engineering work, Railroad surveys, Topographic and Geodesic Surveying, Bridge building, Government Surveying, etc. Several of the students, though not yet through their course, have already been honored with positions on the Coast Survey, and on important Railroads.

Apparatus.—This school is provided with a good Engineer's transit, a compass, an English level, two leveling rods, two brazed link steel chains, Gunther's and Engineers' instruments for Stadia surveying, adopted in the Government Surveys. It has also a model truss bridge 20 feet in length, with moveable braces, and other apparatus for practical illustration.

The course of studies recommended is as follows:

First Year—*First Term.*—Geometry, Drawing, English or Latin; History, two lectures a week. *Second Term.*—Geometry and Algebra, Descriptive Geometry, English or Latin, History. *Third Term.*—Botany, Algebra, English or Latin.

Second Year—*First Term.*—Trigonometry, Surveying, Chemistry. *Second Term.*—Analytical Geometry, Analytical Chemistry or Rhetoric, Shades, Shadows, and Perspective. *Third Term.*—Calculus, Topographical Surveying and Drawing, Mineralogy and Lithology.

Third Year—*First Term.*—Calculus, Roads, Railroads, and Mapping, French or German. *Second Term.*—Analytical Mechanics, Physics, French or German. *Third Term.*—(3 year students, Mahan's Engineering.) Mechanics and Astronomy, Physics, French or German, History.

Fourth Year—*First Term.*—Hydraulics and Practical Astronomy, Strength of Materials and Frames, Geology. *Second Term.*—Stability of Structures, Drawing of existing constructions; History of Civilization and Logic. *Third Term.*—Stone Cutting and Geodesic Surveying, Drawings and Estimates, Political Philosophy and Constitutional Law, Political Economy, Inductive Logic.

3.—SCHOOL OF MINING ENGINEERING.

The course for Mining Engineers differs from that of the Civil Engineering, only in the substitution of Mine Surveys and Constructions, Metallurgy, and Assaying, for Roads and Railroads, Topographical and Geodesic Surveying, and stone cutting.

4.—SCHOOL OF ARCHITECTURE.

The course in Architecture corresponds nearly with the course in Civil Engineering, adding to it the course in Architectural Drawing, Styles of Architecture, and the study of public buildings.

COLLEGE OF CHEMISTRY.

FACULTY.

The Regent.

A. P. S. Stuart, Professor of Analytical Chemistry.

——— ———, Professor of Agricultural Chemistry.

Robt. B. Warder, Assistant in Laboratory.

The object of this College is the education of professional Chemists, Pharmaceutists and Metallurgists. It furnishes, also, facilities to such as wish to pursue a course of Chemistry applied to any of the arts, as glass-making, dyeing, tanning, gas manufacture, electrotyping, photography, etc.

The College is provided with a laboratory fitted up with tables, gas pipes, chemicals and chemical apparatus for a large class to practice. It has also sand baths, stills for water, etc., scales of the highest accuracy and finish, a large binocular microscope of English manufacture, spectroscope, blow-pipes, galvanic batteries, and other important chemical apparatus. An appropriation of $5,500 has recently been made by the General Assembly to increase the apparatus and facilities for this department of study, and it is expected that this fund will be expended this summer under the direction of the Professor of Chemistry.

FIRST YEAR—*First Term.*—Geometry, Chemistry, English Language and Literature, U. S. History, two lectures a week. *Second Term.*—Chemistry, Geometry and Algebra, English or Botany, U. S. History, two lectures a week. *Third Term.*—Analytical Chemistry, Botany, English Literature.

SECOND YEAR—*First Term.*—Trigonometry, Analytical Chemistry, German. *Second Term.*—Analytical Geometry, Physics, Analytical Chemistry, German. *Third Term.*—Practical Chemistry; Mineralogy and Crystallography, Physics, German.

THIRD YEAR—*First Term.*—Drawing, Chemistry and Mineralogy, French, Ancient History. *Second Term.*—Practical Chemistry, Rhetoric, French, Mediæval History. *Third Term.*—Palæontology and Astronomy, Practical Chemistry, French, Modern History.

FOURTH YEAR—*First Term.*—Manufacture of Chemicals, Zoology, Geology. *Second Term.*—Assaying and Metallurgy, History of Civilization and of the Inductive Sciences, Logic. *Third Term.*—Assaying and Metallurgy, History of Philosophy, Constitutional and International Law.

The above course will necessarily vary for the student of Agricultural Chemistry, and the student of Mining and Metallurgy.

COLLEGE OF NATURAL HISTORY.

FACULTY.

THE REGENT.

THOMAS J. BURRILL, Professor of Botany.

A. P. S. STUART, Professor of Mineralogy.

D. C. TAFT, Professor, *pro tempore*, of Zoology and Geology.

The aim of this College is to afford a thorough education and prepa- ition for Practical Geologists, Collectors and Curators of cabinets and useums of Natural History, and for Superintendents of scientific xplorations and surveys.

The several Departments are being rapidly provided with illustra- ve collections and other apparatus. The Botanical Department has a large Herbarium of dried plants, collected by the Powell expeditions, which has been largely increased from other sources. It has Lignarium exhibiting woods in section, also *papier mache* flowers, and fruits of gigantic size, made by the celebrated Auzoux, of Paris, a pink, a papillonaceus flower, a cherry, a strawberry, a pea pod with peas, a vetch legume, a grain of wheat, etc. These gigantic specimens are dissected so as to exhibit clearly even the most minute organs and tissues. The Green Houses, and the Arboretum and Botanical Garden, for which preparations are already made, afford also unbounded opportunities for examining the living plants in process of growth.

The Zoological Department has a human skeleton, purchased in Paris, a manikin made by Dr. Auzoux, skeletons of a cow and other mammals and birds, stuffed preparations of a large number of birds, mammals, fishes, reptiles, etc., embracing bears, wolves, foxes, beavers, wolverines, prairie dogs, etc., birds of prey, songsters, etc.; a dissected horse's leg and hoof, a dissected eye, a trachea and vocal apparatus, in *papier mache*, with numerous French anatomical plates of great beauty. It has also collections of shells, fossils and insects, and a full suite of Entomological specimens is in preparation by Dr. Le Baron, the State Entomologist, who is required by the law of the State to make such collections for the University.

The Geology is illustrated by a full suite of specimens from the State Geological Survey. It has still larger collections in Mineralogy and Palæontology, etc.; received or purchased from several sources, with preparations of ores, etc.

The College has also a large double camera, or magic lantern, with apparatus for dissolving views, with a large collection of fine paintings for the illustration of Astronomy, Geology, Zoology and History. The collections and apparatus are constantly increasing by purchases, donations and manufacture.

The course of studies recommended is as follows:

First Year—*First Term.*—Geometry, Latin or English, Chemistry, United States History. *Second Term.*—Botany, Geometry and Algebra, Latin or English Literature. *Third Term.*—Botany, Analytical Chemistry, Latin, or English Literature.

Second Year—*First Term.*—Vegetable Physiology, Zoology, Trigonometry, German. *Second Term.*—Zoology, collection and preservation of specimens, Physics, German. *Third Term.*—Entomology, Physics, Mineralogy and Crystallography, German.

Third Year.—*First Term.*—Comparative Anatomy and Physiology, Mineralogy, Drawing, French. *Second Term.*—Geology, Rhetoric or History, French. *Third Term.*—Lithological Geology, Palæontology, Astronomy, Political Economy, French.

Fourth Year—*First Term.*—Historical Geology, Practical Astronomy, Mental Philosophy. *Second Term.*—Physical Geography, Meteorology, Metallurgy, History of Civilization. *Third Term.*—Geology of Illinois, Geological Surveys, Excursions, Inductive Logic.

COLLEGE OF LITERATURE, SCIENCE AND ART.

FACULTY.

THE REGENT, Professor of Philosophy and History.
WM. M. BAKER, Professor of English Language and Literature.
EDWARD SNYDER, Professor of German Language.
A. P. S. STUART, Professor of Chemistry.
T. J. BURRILL, Professor of Botany.
S. W. SHATTUCK, Professor of Mathematics.
S. W. ROBINSON, Professor of Physics.
DON CARLOS TAFT, Assistant Professor of Geology and Zoology.
I. D. FOULON, Instructor in French.
——— ———, *Professor of Ancient Languages.

The objects of this College is to furnish a sound and liberal education to fit students for the general duties of life, and especially to prepare them for those business pursuits which require a large measure of Literary and Scientific knowledge and training. It is designed to meet the wants of those who wish to prepare themselves for the labors of the Press as Editors or Publishers, or as Teachers in the higher institutions, or for the transaction of public business. The large liberty allowed in the selection of the special studies of his course will permit the student to give such direction to his education as will fit him fully for any chosen sphere or pursuit.

The Library is well supplied with works illustrating the several periods of English and American Literature.

The several departments of science, also, are provided with a good supply of the works of the best authorities and with a constantly increasing apparatus and cabinets.

In the following recommended course, a number of optional studies are introduced, but it is understood that no student will take more than three studies at a time, without a permit. This course, though not modeled upon that of any other institution, is equal in value to the courses prescribed in our best colleges. Students wishing to take only the English studies and modern languages, may be admitted with the general preparation prescribed for candidates for other courses, but those who wish to take the Latin or Greek language, must come thoroughly prepared in the usual preparatory course in those branches.

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*The work of this Professorship is, for the present, performed by other Professors.

First Year. *First Term.*—Geometry, first five books, Latin, Cicero's works, English Composition, (Greek, the Anabasis, *optional*), History of U. S., two lectures a week. *Second Term.* Geometry finished, Higher Algebra, Latin, Cicero's works, English literature, (Greek *optional*,) History of U. S., two lectures a week. *Third Term.* Botany, Higher Algebra completed, Latin, Virgil, the Æneid or Georgics, English advanced Grammar, (Greek *optional*.)

Second Year. *First Term.* Trigonometry, Chemistry, German, English or Latin. *Second Term.* Analytical Geometry or Chemistry, Physics, German, English or Latin. *Third Term.* Mineralogy, Physics, German, English or Latin.

Third Year. *First Term.* Comparative Anatomy and Physiology, Ancient History, Drawing, French, English or Latin. *Second Term.* Geology, Mediæval History, Perspective, French, English or Latin. *Third Term.* Political Economy and Modern History, Astronomy, French, English or Latin.

Fourth Year. *First Term.* Mental Philosophy, Constitutional History of England and United States, Zoology, Astronomy or Geology. *Second Term.* Moral Philosophy and Logic, or History of Civilization and of the Inductive Sciences, Physical Geography, Meteorology or Analytical Mechanics. *Third Term.* History of Philosophy, or Inductive Logic, Entomology, or Geology of Illinois, Constitutional Law.

SCHOOL OF COMMERCE.

The course in this School may be completed in a single year, and is designed to fit students to become thorough accountants and business men. The special studies of this School may be taken in connection with those of any of the Colleges. For a fuller statement of these studies the reader is referred to the Department of Commercial Science, on another page.

SCHOOL OF MILITARY SCIENCE.

The studies of this school are described fully in the article on another page under the Military Department.

The apparatus of instruction includes a large Drill Hall; 150 muskets and accoutrements complete; 12 cavalry swords; 1 bass drum; 1 tenor drum; 3 fifes; 2 bugles; 18 fencing muskets for bayonet practice; swords, gauntlets and masks, for sword practice; automaton regiment for theoretical instruction; and a large Drill Hall to be erected this summer. The library also includes quite a selection of books on military science, military history and engineering.

REQUIREMENTS FOR ADMISSION.

1. Each student is required, by law, to be at least *fifteen years* of age, but it is believed that few will be found mature enough at this age to enter with the highest profit upon the studies of the University. and it is recommended, as a general rule, that students be at least eighteen years old before entering.

2. The law prescribes that "no student shall be admitted to instruction in any of the departments of the University, who shall not previ-

ously undergo a satisfactory examination in each of the branches ordinarily taught in the common schools of the State." In addition to these, candidates for advanced standing must pass an examination in the studies already pursued by the class, or an equivalent therefor. Those desiring ancient languages must pass in the ordinary preparatory studies in such languages.

3. The examinations heretofore have often exhibited a most lamentable lack of true scholarship, even in the ordinary common school branches. In many cases, it is evident that the fault has been in that too common and sad blunder of teaching, which neglects all thorough drill in definitions and principles, and occupies the pupil wholly with exercises. The student often gains considerable expertness in solving the problems in the book, without being able to answer a single question concerning principles, or to explain, rationally, a single step in the process.

The following statement of topics, to be embraced in the examinations for admission, may help to guard candidates and their teachers against the blunders mentioned:

1st. In *English Grammar*, the candidate must give full and clear definitions and explanations ; in Orthography, formation of derivative words by prefixes and suffixes, and rules for spelling ; in Etymology, classification of nouns, classes and conjugations of verbs, etc., the sentence, its principle parts, classes and modifiers, connectives and their use, modifying words and phrases, adjectives and adverbs, analysis of sentences.

2d. In *Geography*—Form, size, motions and divisions of the Earth by circles ; latitude, longitude and zones ; the continents and their grand divisions ; countries and capitals of Europe and America ; mountain systems and chief rivers and lakes of Europe and America, boundaries, capitals, chief towns, great railroads and canals, of the States of the Union.

3d. *Arithmetic.* Decimal system of notation and numeration, the four grand rules or operations, with clear explanation of processes, reasons and proofs, classification of numbers, reduction, denominate numbers, fractions, terms of fractions, effects of changes in numerator, in denominator, reduction of fractions, addition, subtraction, multiplication and division of fractions, decimal fractions, operations in decimals, percentage, interest, ratio, proportions, involution and evolution.

4th. *Algebra.* Definitions, notation by letters and signs, simple operations, changes of signs and reasons, algebraic fractions, equations, transformations of equations, solutions of problems, methods of elimination, calculus of radicals.

The examinations in other studies need not be described. Candidates for the University should aim to be as thorough as possible in their preparations. If poorly prepared their progress will be slow and painful, and they will run the risk of losing standing in their classes, and failing in their aim.

Frequent and searching examinations will be held to test the progress in study, and to determine each student's fitness to remain in the classes. The University cannot be held responsible for the lack of thoroughness in the common school studies of its students, but will insist on thoroughness in its own proper studies.

A regular examination of all the classes is made at the middle and close of each term. A record is kept of the standing of each student at all the examinations, and from this his final certificate of graduation is made up.

UNIVERSITY UNIFORM.

Under the authority of the act of incorporation, the Trustees have prescribed that all the students, after their first term, shall wear the University uniform. The *University cap* is to *be worn from the first.* This uniform consists of a suit of cadet gray mixed cloth, of the same color and quality as that worn at West Point, and manufactured by the same establishment. Students can procure them ready made on their arrival here. The University cap is of dark blue cloth, and ornamented with the initials I. I. U., surrounded by a silver wreath in front. Students will wear their uniform always on parade, but in their rooms and at recitation may wear other clothing.

STUDENTS' DORMITORIES AND BOARD.

There are in the University building about sixty six private rooms, which are rented to the students who first apply. Each room is designed for two students. These rooms, fourteen feet long and ten feet wide, are without furniture, it being deemed best that the students shall furnish their own rooms.

Good private boarding houses are springing up around the University, where either day board or board and rooms can be obtained with the advantage of the family circle. Boarding clubs are maintained by the students, which furnish meals at a cost of from $1 50 to $2 50 per week. Several students have provided themselves with meals in their rooms, at an expense varying from $1 to $1 50 per week. Coal is purchased at wholesale, and furnished to students at cost.

HOW TO ENTER THE UNIVERSITY.

In answer to the questions often received, the following explicit directions are given to those wishing to enter the University:

1. You must be over fifteen years of age, and of good moral habits. If unknown to the faculty, you should bring a certificate of character.

2. You must possess a thorough knowledge of the common school branches, arithmetic, grammar, geography, history of the United States, and algebra to equations of the second degree.

3. You should enter at the beginning of a term; but you may enter at any other time if prepared to go forward with any of the classes.

4. If doubtful of your ability to enter the department you have selected, write to the Regent, J. M. Gregory, Champaign, and state what branches you have studied, the progress you have made in each, and your wishes as to course and term of study.

HOW CAN I PAY MY WAY?

In answer to that question which often reaches us from earnest young men, eager for an education, but without means, we reply:

1. Your necessary expenses (except for books and clothing,) will be as stated on the next page, under the head of "Expenses."

2. During the Spring and Fall terms, and to some extent during the Winter term you can find work either upon the University farm and garden, or in the shops, or for members of the Faculty and other gentlemen. The large increase in the number of students forbids our promising work to all, but much labor will be provided, and an active, earnest and faithful young man rarely fails to find enough to do. Working *three hours a day*, or eighteen hours a week, will enable you to pay your board, including fuel and lights. Some pay their entire expenses by their labor without at all hindering their studies.

If you understand some common mechanical trade, you will much more easily find work and usually at better wages.

3. You should have, to start with, money enough to pay your entrance fee and bills, to purchase books and cap, and to pay for your half of the furniture of the room. This will require about $35. It will be well also to have enough to pay board for two or three weeks till you can get settled. After starting you will easily go through, as your vacations, if well employed, will afford you enough to pay for clothing and books.

4. You will also find numbers of fellow-students who are working their way, and who will, with true brotherly feeling, advise and assist you. Come on without fear. A good education is worth all it will cost you. Remember that if education *costs much*, ignorance *costs more*. Education gives knowledge at *wholesale*. Ignorance buys it at *retail*, and often gets cheated in the quality.

TERMS.

The college year is divided into three terms, of fourteen, twelve and ten weeks. Students are expected in all cases to be present on the first day of the term. Those unavoidably delayed will be required to make up all lessons which their classes have passed over in their absence.

CALENDAR FOR 1871-2.

Examination for admission	Tuesday, Sept. 12, 1871
Fall term opens	Wednesday, Sept. 14, 1871
Fall term closes	Wednesday, Dec. 20, 1871
Vacation of two weeks.	
Examination for admission	January 2, 1872
Winter term opens	January 3, 1872
Winter term closes	March 27, 1872
Examination for admission	March 28, 1872
Spring term opens	March 29, 1872
Spring term closes	June 7, 1872
Commencement	June 7, 1872

EXPENSES.

(Tuition fee in all Departments.)

Fee for incidentals, per term	$2 50
Room rent in University building for each student, per term	4 00

Each student is required to pay a matriculation fee of $10 on first entering the institution. This entitles him to a membership till he completes his studies. All bills due the University must be paid, and the Treasurer's receipt be shown to the Regent, before the student can enter the classes.

The annual expense of a residence at the University, exclusive of books and clothing, will be nearly as follows:

Room rent and incidentals	$19 50@	$19 50
Board, from	54 00@	190 00
Fuel and lights, from	10 00@	15 00
Washing, 75 cents per dozen	10 00@	15 00
Total	$93 50@	$244 50

Many young men reduce the expense to within $90 per year, and pay this by their labor during the year. It ought to be known that *any young man can pay his way through college* who is willing, for the sake of an education, to practice steadily the virtues of industry and economy.

RECITATIONS AND EXERCISES.

FIRST YEAR.

	7–8.	8½–9½.	9½–10½.	10½–11½.	11½–12½.	1½–2½.	2½–3½.	3½–4½.
1st Term.	Geometry, 1st Division.	Inorganic Chemistry.	German, 1st Div. Agriculture.	Latin, (Cicero.) German, 2d Div.	English, 1st Division.	Book-Keeping. Drawing.	Drawing. Chemical Physics.	History of U. S. Drill, Alternate.
	7½–8½.	9–10.	10–11.	11–12.	1–2.	2–3.	3–4.	
2d Term.	Geometry, 1st Division. (Algebra.)	Inorganic Chem'y. Descr. Geometry. Labor from 10–4.	English, 1st Division.	Botany. Geometry, 2d Div. Algebra, 2d Div.	Latin, (Cicero and Virgil.) German, 1st Div.	Book-Keeping.	History U. S. Agr. Chem. Lec. (Alternate.)	
3d Term.	German, 1st Division, Latin (Virgil.)	Lectures on Chemistry applied to Arts, Botany. Labor from 10–3½.	Botany. Algebra.	English, 1st Division.	Algebra.	Book-Keeping.	Drawing and Agriculture.	Lectures. Drill. Alternate.

SECOND YEAR.

1st Term.	German, 2d Div. French.	English, 2d Div. Botany. Labor from 9–3½.	Trigonometry.	Zoology.	Latin, (Livy.)	Designing and Drawing. Agriculture.	Surv. & Leveling Mil. & Anc. Hist. Alternate.	Drill & Lectures.
	7½–8½.	9–10.	10–11.	11–12.	1–2.	2–3.	3–4.	
2d Term.	Mediæval History. Military, Alternate.	English, 2d Division.	Zoology and German.	Latin, (Horace.) Labor from 9–3½.	Analytical Geometry.	French.		
3d Term.	English, 2d Division.	Calculus. Agriculture.	German. Latin.	Lect. on Chemistry applied to Arts. Mineralogy. Labor from 9–3½.	Entomology.	French. Topo. Surveying. Drawing.	Political Econo'y.	Drill.

THIRD YEAR.

	7—8.	8½—9½.	9½—10½.	10½—11½.	11½—12½.	1½—2½.	2½—3½.	3½—4½.
1st Term.	English, 3d Division.	Orchards and Fruit Growing.	R. R's & Mapping Latin.	Calculus and Analytical Geometry.	Principles of Mechanism.	Constitutional History.	Comp. Anatomy and Physiology	Military and Drill. Alternate.
	7½—8½.	9—10.	10—11.	11—12.	1—2.	2—3.	3—4.	
2d Term.	Latin.	Calculus, Physics. Nurseries and Plant Labor from 9—3½.	Anal. Mechanics. Animal Husbandry.	English, 3d Division.	Geology.	History of Civilization.	Military.	
3d Term.	Analytical Mech. (Desc. Astronomy.)	English, 3d Div. Practical Chemistry 9—3½.	Physics.	Vegetable Garde'g. Mahan's Engineering.	Latin.	Constitutional Law	Geology.	Military and Drill

FOURTH YEAR.

1st Term.	Geology.	Mental Philosophy, Practical Chemistry. 9—3½.	Strength of Materials and Frames. Hot & Green Houses	Hydraulics, etc. Rural Economy, etc	Agriculture.	Practical Astronomy.		Lectures and Drill
	7½—8½.	9—10.	10—11.	11—12.	1—2.	2—3.	3—4.	
2d Term.		Moral Philosophy and Logic. Practical Chemistry. 9—3½.	Prime Motors, Stability of Structures	Meteorology.	Constructive Drawing.	Veterinary Surgery.		
3d Term.	Mill Work and Machines.	Practical Chemistry 9—3½. Hist. of Philosophy. Logic.	Geology of Illinois.	Designing, Drawing and Estimates.	Landscape Gard'g Stone Cutting and Geodesy.	History of Agriculture.		

DONATIONS.

The following is a list of donations received during the year :

St. Joseph Manufacturing Co., Mishawaka, Ind., by Mr. Cooper, Agent, a Challenge Mill for grinding feed.

Hovey & Co., Chicago, a "Landscape" Lawn Mower.

Robert Douglass & Sons, Waukegan, 4 lbs Seeds of Eu. Larch and Evergreens.

Geo. S. Haskell, Rockford, Ill., 54 papers Garden Seeds, 2 quarts Russell's Corn.

Department of Agriculture, Washington, Garden Seeds, Seed Wheat, etc.

A. S. Fuller, N. Y., 40 varieties Raspberries, 12 varieties Blackberries, 27 varieties Currants, 7 varieties Gooseberries.

J. Baldwin, Jacksonville, 50 Choice of Turner's Seedling Raspberries.

Mitchell, Harper & Co., El Paso, "Corn Dodger" Cultivator with Harrow attachment.

A. M. & E W. Bakewell, one Corn Harrow.

D. M. Osborne, one Kirby Two-Wheel Mower.

O. Albertson, Canton, Ind., two Improved Adjustable Hoes.

J. H. Pickrell, Harristown, two pure blood Berkshire Pigs.

Fenner & Call, Urbana, Ill., one Trench Plow.

Deere & Co., Moline, Ill., part price of Plow, $17.

S Hutchingson, Griggsville, Ill., one patent Harrow.

King & Hamilton, Ottawa, Ill., part price of Champion Corn Cultivator, $25.

Weir Plow Co., Monmouth, Ill., Corn Cultivator.

Geo. McKinley:
- Herndon & Gibbon's Valley of the Amazon.
- De Tocqueville's Democracy in America.
- Sunday School Teacher, 1866–9.
- Smith James' Christian's Defense.
- Smithsonian Report, 1834.
- Moliva's Geographical, Natural and Civil History of Chili.
- Dirgald Stewart's Works.

Rev. A. S. Farr:
- Burton's Anatomy of Melancholy.
- Crabbe's Tales.

Hiland Hall, Bennington, Vt.:
- Hall's History of Vermont.
- The Capture of Ticonderoga.

W. Whitehead, Newark, N. J.:
- Four Pamphlets.

E. D. Cope, Philadelphia:
- Two Pamphlets.

Prof. Wm. M. Baker:
- Silk Culture.

Iowa State Agricultural Society:
- Bound Reports, 1859, '66–7–8–9.
- Nine Pamphlets.

California State Agricultural Society:
- Four Pamphlets.

New York Poultry Society:
Two Pamphlets.

N. W. Dairyman's Association:
One Pamphlet.

New York State Library:
Catalogue in four Volumes.
Three Pamphlets.

Department of Agriculture:
Four Copies Report 1869, Copies 1853–5, 67–68.

Department of the Interior:
Documents 2d Session 40th Congress, 28 Volumes.

Hon. Jesse H. Moore, Decatur:
Several Volumes of Documents.

Charles Downing, Newburgh, N. Y.:
About 400 varieties of Pear Cion.

John Deere, Urbana, Ill.:
Sub-Soil Plow.

Hovey & Co., Chicago, Ill.:
Lawn Mower.

W. C. Flagg, Moro, Ill.:
Apple Trees of 44 varieties, raised by him near Alton, Ill.

M. L. Dunlap & Sons:
Two Standard Apple Trees and one Early Richmond Cherry on its own roots.

Princeton Manufacturing Company:
One Corn-Stalk Cutter.

Dr. Humphrey, Galesburg, Ill.:
Collection of many varieties of Apples and Fruits.

R. Taylor, Urbana, Ill.:
300 Currant Cuttings.

Mrs. S. T. Chase, Urbana, Ill.:
200 Gooseberry Cuttings.

CERTIFICATES.

The following are the forms of Certificates of Scholarship adopted, in accordance with the charter of the University, which prohibits the conferring of diplomas, but authorizes the issuing of "Certificates of Scholarship," which certificates shall, as far as is practicable, set forth the precise attainments as ascertained by special examination of the parties applying for the same, respectively, in the various branches of learning they may have respectively studied during the attendance in the University:

CERTIFICATE OF FULL COURSE.

The Illinois Industrial University.

Chartered, 1867. { State Seal. } Opened, 1868.

The Regent and Trustees of the Illinois Industrial University, on the recommendation of the Faculty, confer upon .... *This Certificate*, in testimony of his having pursued a *Full Course of Studies* in the College of ...., in this University, in which he has successfully studied and passed *examinations* in the following branches of learning (the number of terms of study, and the per centum of scholarship attained, being marked opposite each branch:)

Studies.	No. of Terms.	Per Centum.

And having exhibited, during his course, due *fidelity* and *good conduct*, he is, *by these presents*, duly honored with the *commendations* of the authorities of the University.

Given at Urbana, this .. day of ...., 187 .

(Signed) ...., *Regent.*

[Members of Faculty.] [Members Board of Trustees.]

CERTIFICATE OF PARTIAL COURSE.

The Illinois Industrial University.

Chartered, 1867. { State Seal. } Opened, 1868.

The Regent and Trustees of the Illinois Industrial University, on the recommendation of the Faculty, confer upon .... *This Certificate*, in testimony of his having pursued a *Partial Course of Studies* during .... years, in the College of ...., in this University, during which he has successfully studied and passed *examinations* in the following branches of learning (the number of terms of study and the per centum of scholarship being marked opposite each branch:)

Studies.	No. of Terms.	Per Centum.

And having exhibited, during his course, due *fidelity* and *good conduct*, he is, *by these presents*, duly honored with the *commendations* of the authorities of the University.

Given at Urbana. this .. day of ...., 187 .

(Signed) ...., *Regent.*

[Members of Faculty.] [Members Board of Trustees.]

ACT OF APPROPRIATION.

AN ACT making appropriations for the Illinois Industrial University.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly,* That the sums hereinafter mentioned be and the same are hereby appropriated to the Board of Trustees of the Illinois Industrial University.

For the erection of a main building at a cost not exceeding one hundred and fifty thousand dollars when completed, to contain a hall for public exercises, the library, geological, zoological and botanical rooms, and rooms for lectures and class exercises and offices, the sum of seventy-five thousand dollars.

For the erection of a building for the Mechanical department, at a cost not exceeding the amount hereby appropriated, when completed, to contain the rooms necessary for instruction in mechanical science and military tactics, for collections of models, work shops and other necessary rooms, and for furniture and apparatus for the same, the sum of twenty-five thousand dollars.

For Chemical and Mining apparatus and furniture, and furniture and books for Chemical department, the sum of five thousand five hundred dollars for two years.

For the Horticultural department, for the additional seeds, trees, and labor for the forest plantations, the sum of seventeen hundred and fifty dollars per annum for two years.

For the Agricultural department, for the expenses of field and other experiments, and for expenses of the annual courses of Agricultural lectures held in various parts of the State, the sum of three thousand dollars per annum for two years.

For apparatus and books for instruction in Agriculture and the mechanic arts, and the various branches of learning relating to the same, the sum of five thousand dollars per annum for two years.

SEC. 2. The Auditor of State is hereby authorized and directed to draw his warrant upon the Treasurer of the State for the appropriations for building, in favor of the parties to whom the same may be due, upon proper vouchers certified as correct by the Trustees or a majority of them, and approved by the Governor, and for the other appropriations herein, upon the order of the Board of Trustees or a majority of them, and the approval of the Governor: *Provided,* that no sum greater than $5,000 shall be drawn at one time for other than building purposes: *And provided, further,* that a second warrant shall not be drawn until satisfactory vouchers shall have been approved by the Governor, and filed with the Auditor, showing that all sums previously drawn have been properly expended for the purpose for which the same was appropriated.

SEC. 3. For the construction of said building the Trustees shall not obligate the State for the payment of any sum of money in excess of appropriations made for that purpose; and the said Trustees shall, before either or any portion of said appropriations for building purposes shall be expended, cause to be prepared a full and complete set of plans and specifications of the entire proposed buildings, which shall be accompanied by estimates carefully made of the cost thereof, which shall be considered at a regular meeting of the Board, and by them approved, when it shall be submitted to the Governor for his approval. In case he approves the same, a copy of said estimates shall be filed in the Auditor's office when such appropriations may be expended.

APPROVED April 15, 1871.

CERTIFICATES OF SCHOLARSHIP,

Granted June 7, 1871.

Name.	Residence.	Year	Scholarship per cent.
Jared Teeple, (Elective)	Elgin	8	97—
Isaac S. Raymond, (Civil Engineering)	Champaign	3	89—
Henry L. Town	Batavia	....	....
James A. Williams	Urbana	....	....
Elvan F. Moore	Tolono	....	....
Samuel W. White	Paxton	....	....
Edwin B. Hazard	Lyndon	....	....
Edgar Sawyer	Tiskilwa	....	....
Robert H. Hazlett	Springfield	....	....

NAMES AND STANDING OF STUDENTS

Receiving Certificates of Scholarship June 7, 1871.

Names.	Residence.	Course.	No. Terms.	Scholarship per cent.
Edward B. Hazard	Lyndon	Agriculture	7	91
Robert H Hazlett	Springfield	Elective	4	88
Elvan F. Moore	Tolono	Agriculture	6	87
Adolphus L. Rader	Tennessee	Elective	6	85
Isaac S. Raymond	Champaign	Civil Engineering	9	89
Edgar Sawyer	Tiskilwa	Commercial	4	95
Jared Teeple	Elgin	Elective	9	97
Henry L. Town	Batavia	Agriculture	5	90
Samuel W. White	Paxton	Elective	4	94
James A. Williams	Urbana	Elective	7	82

PROGRAMME OF THE CLOSING EXERCISES

For the Academic Year 1871.

Sunday, June 4, 1871.

Baccalaureate Address, by the Regent, Dr. J. M. Gregory, University Chapel, at 4 P. M.

Monday, June 5, 1871.

Examinations from 8 to 12 A. M. and 2 to 4 P. M. Address before the Industrial Society, by Ex-Governor Richard J. Oglesby, at 7 P. M.

Tuesday, June 6, 1871.

Examinations as on Monday. Address before the Literary Societies, by J. Mahoney, Esq., of Chicago, at 7 P. M.

Wednesday, June 7, 1871.

Exercises of the third year students, commencing at 9 A. M.

1. **Music.**
2. **Prayer.**
3. **God in Nature. Charles W. Rolfe, Montgomery.**

*4. Education necessary to the life of the Republic. Henry N. Drewry, Mason.
5. Columbia's Heroes. James W. Mathews, Mason.
*6. Should our Institutions foster a Military Spirit? Miles F. Hatch, Bliven's Mill.
7. Music.
*8. Chemistry in relation to the world's progress. Milo B. Burwash, Champaign.
*9. The Mineral World. Reuben O. Wood, Woodburn.
10. The Past Decade. Stephen A. Reynolds, Belvidere.
11. Ancient and modern Engineering. Willis A. Reiss, Belleville.
12. Music.
13. Antiquity of Time. Calvin F. Parker, Philo.
*14. Sources of a Nation's Wealth. David E. Swyer, Belleville.
15. Scientific Education. Charles W. Silver, Urbana.
*16. Progress of the Industrial University. Jacob N. Wharton, Bement.
17. Music.
18. Change. Isaac S. Raymond, Champaign.
19. Achievements of the American People. James A. Williams.
20. Misplaced and Appropriate Labor. Jared Teeple, Elgin.
*21. Practical Education. Geo. H. Lyman, Richland.
22. Music.
23. Presentation of Certificates and Address to the Class. The Regent.
† Address before the University, by President Erastus O. Haven, D. D., at 2 P. M. Exhibition Drill of the University Battalion at 3:30 P. M.

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*Excused
†Not delivered.

FOURTH ANNUAL MEETING

OF THE

BOARD OF TRUSTEES OF ILLINOIS INDUSTRIAL UNIVERSITY.

URBANA, *March* 7, 1871.

The Board met in the University building, at 4 o'clock P. M.

The scriptures were read and prayer offered by the Regent.

The roll was then ordered to be called, when Hon. Newton Bateman presented a communication from the Secretary of the Senate, informing the Board that the following gentlemen had been confirmed as Trustees to fill vacancies:

O. B. GALUSHA	6th	Congressional	District.
J. R. SCOTT	7th	"	"
ROBERT B. HARRINGTON	8th	"	"
WM. B. ANDERSON	11th	"	"
J. M. PEARSON	12th	"	"
BURDEN PULLEN	1st	Grand	Division.
J. H. PICKRELL	2d	"	"
GEORGE S. BOWEN	3d	"	"
LUTHER L. GREENLEAF	3d	"	"

The roll was then called.

Present, Messrs. Allen, Bateman, Blackburn, Brown of Chicago, Brown of Pulaski, Brown of Sangamon, Cobb, Cunningham, Edwards, Galusha, Goltra, Griggs, Lawrence, Pickard, Pickrell, Pearson, Slade, Scroggs, Scott, and the Regent.

Absent, Messrs. Anderson, Harrington, Hayes, Greenleaf, Johnson, Mahan, Pullen, Van Osdel, Wright, and the Governor.

The oath of office was then administered to the new members present by Judge Cunningham.

On motion, the members of the Board, whose time had expired and whose successors had been appointed, but were not present, were requested to remain and take part in the transactions of the Board, their expenses in attending this meeting to be paid by warrants drawn by the Regent.

It was voted that the reading of the minutes of last meeting be dispensed with, as printed copies of the Annual Report were in the hands of the members of the Board.

On motion, the Secretary was ordered to notify, by telegraph, the newly elected members of the session of the Board, and invite their attendance.

The Regent then read the—

ANNUAL REPORT OF THE REGENT.

To the Board of Trustees of the Illinois Industrial University:

Gentlemen—The recurrence of your annual meeting calls upon me to lay before you the annual statement of the progress, condition and wants of the University. I am happy in being able to report to you a year of large progress and prosperity in every department of our work.

The records of the meetings of the Executive Committee, which are herewith communicated, will show you their proceedings during the year—which will, doubtless, meet your approval.

FACULTY AND ASSISTANTS.

There have been on service throughout the year, or some part thereof, the following teachers, lecturers and assistants:

Wm. M. Baker, Professor of English Language and Literature.

W. F. Bliss, Professor of Agriculture.

A. P. S. Stuart, Professor of Chemistry.

S. W. Robinson, Professor of Mechanical Science.

T. J. Burrill, Professor of Botany and Horticulture.

S. W. Shattuck, Professor of Civil Engineering and Mathematics.

Edward Snyder, Professor of Book-keeping, Military Tactics and German.

James Bellangee, Teacher of Architectural Drawing.

Henry M. Douglass, Librarian and Assistant Teacher.

Robert Warder, Assistant in Chemistry.

I. S. Foulon, Teacher of the French Language.

Alex. Thomson, Assistant Teacher of Engineering.

Dr. H. J. Detmer, Lecturer on Veterinary Science.

Dr. Manly Miles, Lecturer on Agriculture.

Dr. E. S. Hull, Lecturer on Horticulture.

Prof. Bliss, called away by the care of his own farm, resigned the Professorship at the close of the Spring term.

Negotiations are already in progress to fill the vacant chair of agriculture, and also to secure suitable men for the professorships of geology and zoology, and of history and social science. All of these places should be filled before the opening of the next academic year.

The terms of service of the assistant teachers now under employment will expire with the current year, but as the number and kind of assistants required the next year will depend partly upon our success in filling the chairs mentioned, it will be best to refer their employment to the Executive Committee, or to authorize the Regent to employ, from time to time, such assistants as may be required, within such restrictions as to salary as the Board may prescribe.

In the practice departments the following assistants have been on service during the year: H. K. Vickroy, orchardist and nurseryman; Thomas Franks, gardener and florist; J. S. Searfoss, carpenter; Alexander Thomson, machinist; Geo. Upstone, foreman on stock farm.

Mr. Upstone having been disabled by an accident in December last, Mr. G. W. Rice, of Champaign, kindly tendered his services, and was employed to the first of March, giving excellent satisfaction.

The close of Professor Bliss' term of service, the first of September, left the farm without any responsible superintendent, and the Executive Committee, deeming it wise to secure a man of requisite education and experience, to take the responsibility until the chair of agriculture should be again filled, instituted inquiries for suitable candidates, and finally appointed, to the place of head farmer, Mr. E. L. Lawrence, of Belvidere, Boone county. Mr. Lawrence entered upon service the 1st of March.

Mr. Upstone, having been temporarily disabled by the breaking of his leg, while in the service of the Board, was paid his wages for the month of January, and still occupies a portion of the house, by the kindness of Mr. Lawrence. I respectfully suggest that, in consideration of his misfortune, his wages be allowed to the first day of March, or that some allowance be made him to aid in the payment of his doctor's bill.

ATTENDANCE AND STUDIES.

The records of the year show a gratifying progress in numbers and qualifications of students. The attendance, during the several terms since last meeting, was as follows:

During the Spring Term	149
During the Autumn Term	204
During the Winter Term (not yet ended)	226
Total attendance for the year	280
Total attendance of preceding year, to June	196

The number entered for the several courses, the present term, was as follows:

For Agricultural and Horticultural courses	60
For Mechanical and Civil Engineering	44
For Special Chemical course	9
For Commercial	12
For Architecture	4
For Military course	24
Students in Chemical Laboratory	36

Several are entered as students of Mining Engineering, and an early development of this course will be required. Many of the younger students report for a general or elective course, not having yet fixed upon any pursuit or profession.

The representation from the different counties of the State has steadily grown greater as the University has become more widely known, fifty-five counties being now represented. Every year, circulars and lists of questions for the examination of students, have been sent to the County Superintendents of schools, and great credit is due these officers for the generous and efficient service they have rendered the University.

ADMISSION OF FEMALE STUDENTS.

A brief time before the opening of the Autumn Term, the Executive Committee decided upon the admission of female students, and fifteen entered the first term thereafter. The number, this term, is twenty-two, and there is reason to believe the number will rapidly increase hereafter.

TERMS OF ADMISSION.

The law prescribes that "no student shall be admitted to instruction in any of the departments of the University, who shall not have attained the age of fifteen years, and who shall not, previously, undergo a satisfactory examination in each of the branches ordinarily taught in the common schools of the State." This requirement has been interpreted as fixing simply the lowest limits of the qualifications which the Trustees might prescribe, leaving them free to fix such higher qualifications as might seem needful in the progress of time.

A steady advance has been seen in the qualifications of the larger number of candidates for admission, though some have still applied and been admitted under an examination in the common branches.

The increasing number of applicants for admission, and the large increase of work now required by the higher classes, create the necessity for raising the standard of qualifications for admission. It is recommended that candidates for admission the next year be required to pass thorough examinations in English Grammar, Geography, Mathematical, Political and Physical, History of the United States, Arithmetic and Algebra, and that the following year there be added to the requirements the elements of Natural Philosophy and Physiology.

The requirements of those who are candidates for advanced standing, or for classical studies, ought, of course, to remain as heretofore.

I suggest, also, whether, after the next year, it may not be wise to add a year to the required age for admission.

While the University owes no slavish submission to the customs of other institutions, in other and older States, it may wisely, when necessary, restrict its work to those who are best prepared to profit by its instruction, and to fulfill the work which will be required of its graduates. If any departure be allowed from the required scholastic preparation, it should be in favor of students of advanced age, whose employments have given them a mental development and power which younger students could only gain from the study of books.

FINANCES.

The permanent funds have been increased during the past year by the sale of 50,000 acres of land scrip for $44,821.60, and by the sale of 160 acres of the Griggs farm for $9,600. The entire fund, including these additions, now amounts to $363,421.60, and the estimated income from the same to $27,002. The Treasurer's report will exhibit in detail the investments of this fund, as also the items of the annual income from all sources. The list of warrants, accompanying this report, will give you the several items of expenditures.

The total income for the year, from all sources, not including legislative appropriations, was $41,357.01. The total expenditures, excepting those from appropriations aforesaid, was $38,654.69.

The Bookkeeper's statement, which I transmit herewith, will give you the details of the expenditures of the legislative appropriations. I believe the expenditures have been made with strict economy and fidelity, and have given to the departments for which they were made large and useful developments.

The estimated income for next year, from all sources, is $41,426.80. The estimates for the current expenditures have been placed in the hands of the Finance Committee, and will be reported by that committee with such modifications as they may deem necessary. A considerable increase of the appropriation for the expense of instruction will be needed, to meet the expected increase in the number of the Faculty.

A large amount of our funds has remained invested in six per cent. State bonds. This amount can be quite safely invested in good county bonds yielding ten per cent. I submit whether the increase of the wants and expenses of the University do not require an immediate change to be made in these investments.

The increase of the taxes on our lands in Minnesota and Nebraska will be noticed as an indication of the increasing value of these lands. Information received from private sources confirms this inference, and the time is approaching when active measures should be taken to bring them into market.

It will be recollected that we have still on hand scrip for 25,000 acres to be located or sold. A new effort ought to be made this season to secure the location of this scrip. The progress of the new Pacific Railroads will open some very desirable lands for location.

The inventory prepared by the Bookkeeper gives the present gross assets of the University to be as follows:

Real estate	$129,150
Personal property, including all apparatus	65,600
Wild lands located with scrip	
Funds invested	

I suggest that the funds for the several practical departments—as the Agricultural, the Horticultural and the Mechanical—be charged directly with all salaries and expenses attending them, and credited with all proceeds coming from them; and that no amounts be appropriated to them from the general fund, except to meet deficiencies. Their accounts will then show, constantly, the actual profit and cost of each department, and will induce an economy not at all promoted by our present form of accounts.

AGRICULTURAL DEPARTMENT.

The work in this department was under the charge of Prof. Bliss till the first of September, when his resignation took effect. The crops were generally fair and some of them excellent, though the excessive dryness lessened the yield in many cases. A statement of crops raised and harvested will be appended to this report.

From the appropriation of $25,000 made in 1869, for this department, there have been erected two large barns—one on the Experimental farm, 48 by 76 feet, with cellar extending under about three-fifths of it, costing nearly $5,000; the other on the Stock farm, built in form of an L, each limb being 80 feet long by 40 feet wide. A basement with heavy stone walls and cemented floors, extends under it all, containing a cattle department, swine pens, a root cellar, cooking room, manure pit, etc. It is well supplied with cisterns, a well, and a cistern for liquid manures. The total expense of the whole was about $10,000.

The farm is now well supplied with teams and tools. The funds designed for the purchase of some thorough-bred neat cattle, and other stock, was put into stock steers and hogs, for the purpose of feeding out the large corn and hay crop. The increased fund arising from the sale of these animals will enable us to purchase several valuable animals of different approved breeds, with which to begin our experiments illustrating stock breeding and feeding. There remains an unexpended balance of the appropriation, from which there ought to be provided a steam cooking apparatus and some other much-needed machinery, including a windmill for pumping water for stock, and either a small steam-engine or a good horse-power, with cutting and threshing machines.

I believe that at last we have adopted a wise and safe policy in the management of this large farm. A competent Head Farmer has been employed at a minimum salary, and he is given a large pecuniary interest in the successful management, in the offer of a maximum salary, to be paid out of net income of farm. The plans of cultivation are still under the control of the Board, but the Farmer is to be allowed to employ his own laborers. If he is liberally supported he counts confidently on making the farm yield not only his maximum salary, but also a generous surplus for the University.

The Experimental farm will, it is hoped, be provided for by the appropriation (now pending before the Legislature) for agricultural experiments. The amount of this appropriation is $3,000 annually, for two years—$500 a year of this sum being designed to cover the expenses attending the lecture courses through the State.

No part of the work of the University is more difficult to manage successfully than that of sound agricultural experimentation, and no part is more interesting to the agriculturists of the State. To make these experiments really valuable, they must be scientific in character and systematic in scope. An exhaustive series of experiments, covering the entire ground of Agriculture in its several departments, will necessarily occupy many years, and will require the close attention of a skillful superintendent. To provide for such a series of experiments is the object of the appropriation asked; and, anticipating its grant, I have directed the preparation and staking out of a set of experimental plats, containing 1-20 of an acre each, on a plan recommended by Prof. M. Miles, of Michigan. These plats are to be cultivated one or two years without manures, to determine what varieties and differences the several plats exhibit in their natural state. They will then be ready for use in testing the effects of the several fertilizers, and of varying cultivation. A similar set of plats will be prepared for experiments in the several varieties of the different grains, grasses and roots. Experiments should also be undertaken in some of the new cultures recommended so often for introduction into our State. Also, experiments in Animal Husbandry, the feeding and breeding of cattle, sheep, swine, etc.

VETERINARY CLINIC.

Closely connected with Animal Husbandry, and a most important part of an Agricultural education, is the knowledge of Veterinary science. As an experiment in this department, the Executive Committee employed Dr. H. J. Detmer, V. S., to give a course of lectures to the Agricultural students during the Fall and Winter terms. During the present term he is conducting, with great success, a free veterinary infirmary, to give his class, numbering 26 students, opportunity to witness and assist in the treatment of sick animals. His report of the cases treated, which is hereto appended, shows that 55 patients have been presented for advice or treatment.

Although the University has not the means to open a full Veterinary College for the education of veterinary surgeons, still it is desirable to furnish some instruction to our Agricultural students in a branch so important to the stock interests of this State. It is cordially recommended, therefore, that the experiment be repeated another year, and that in case new mechanic shops be erected, the present shop-building be surrendered to be used as a veterinary stable and infirmary. Dr. Detmer's marked success and evident ability will certainly recommend him for appointment, but as there are some questions as to the practicable extent and relations of his course to the Agricultural course, of which it forms part, I recommend that the question of his employment another year be referred to the Executive Committee.

HORTICULTURAL DEPARTMENT.

The report of Prof. Burrill, which I herewith communicate, affords the detailed statement of the work done in his department the past year. This department is understood to include the Ornamental Grounds and Green Houses, the Market Garden, the Nurseries, the Orchards and Fruit Plantations, and the Forest planting. The ornamental grounds continue to improve in beauty, and are exercising an evident influence upon the tastes of the students. The new green house, furnished by the appropriation of 1869, is already well filled, and several of the students, including some of the young ladies, are taking lessons in its management.

The management of the market garden has, as yet, failed to secure remunerative results. The chief and perhaps fatal difficulty is found in the lack of a good home market for the more bulky or perishable vegetables. The effort now is to reduce the crops to such kinds as may either be transported profitably to Chicago, or preserved in cans. The work is too important to be relinquished without further trials.

The nurseries are designed primarily to supply the trees needed for our own orchards and forest plantations, but a large surplus will be raised for general sale. There are now in nursery 177,000 young trees for the forests and shelter belts, and a large number of pear and apple grafts have been prepared during the past winter, affording valuable practice to the students of Horticulture, and enlarging the nursery stock. The apple orchard now contains 2,319 trees, embracing about 1,180 varieties. Over 400 varieties of pears are either in orchard or nursery, and several varieties each of grapes, currants, raspberries, strawberries, gooseberries, and blackberries.

An appropriation has been asked to carry out the forest planting, as it will necessarily involve a large expense for which no return can be expected for many years. A large part of the trees now on hand are ready to go into permanent place this spring.

Nearly twenty acres of the garden ground have been thoroughly underdrained, and there remains a portion of the appropriation sufficient to underdrain the remainder of these grounds, or at least such as it is desirable to underdrain. Prof. Burrill is infusing new life into his department.

THE MECHANICAL DEPARTMENT.

The report of Professor Robinson will give, in detail, the work done n the shop. When it is recollected that this department began its proper work only about one year ago, the report will afford strong evidence of the useful character and brilliant prospects of this branch of industrial education. There has been a steady increase in the number of students in the Mechanical and Engineering courses, and the liveliest interest has been shown in their studies and shop practice. You will see in our apparatus cases a goodly amount of apparatus made in the shops by students. The cases themselves are also their work. The steam heating, introduced into the University building since your last meeting, is the work of their hands. The heating apparatus of the green house was cast from patterns made in the shop, and then put in by student labor. Some valuable pieces of apparatus have been manufactured for other institutions, or for private parties, and if the shop is credited with the value of the apparatus manufactured, and the work performed for other departments, it will be found self-sustaining.

An appropriation of $25,000 has been asked from the Legislature to provide larger and better furnished shops, and for a drill hall, and plans will be laid before you for your approval, for such building. The erection of such a building will greatly facilitate the work of the department and increase its power. I cannot too strongly commend the earnestness and zeal of Prof. Robinson in his work.

OTHER DEPARTMENTS.

It is not necessary to go into detail in reference to the other departments, but it would be unjust to pass them in silence. The department of the English Language and Literature, unsurpassed by any other in its practical every-day value, has been so admirably managed by Prof. Baker as to demand for him your highest consideration. I have never known, any where, more life and energy thrown into this study of our mother tongue; and the students who have received the benefit of his indefatigable instruction will long have reason to remember the thorough drill given them in the correct use and critical knowledge of their vernacular, and of the rich fields of its splendid literature. The classes in this department have been larger than in any other, the class beginning with this year numbering over 70 members.

The department of Chemistry has also exhibited remarkable vitality. The fundamental character of this science, and its wide scope of relations both to the other sciences and to agriculture and the useful arts, give it great importance in an institution consecrated to industrial education. It is, therefore, a matter of profound gratulation that so large a proportion of our students voluntarily seek this course. It is no small proof of the efficiency of its enthusiastic and able Professor, H.

P. S. Stuart, that he should have secured thus early so much interest in his department. The new chemistry class entering last fall, numbered 50 students, and already there are 38 at work in the over-crowded Laboratory.

An appropriation of $50,000 was asked for a Laboratory building, furnished with the necessary apparatus for mining and metallurgical uses, as well as chemical analyses. Its importance was recognized by the committees to which our application was referred, but the extent of appropriations needed by other institutions compelled a present denial of the request. This is the more to be regretted, because, long before a suitable building can be erected, the department will have utterly outgrown its accommodations. It may be found wise to prepare temporary quarters for it in the basement, or some other part of the new main building.

The department of Civil Engineering has also won some laurels under the efficient management of Prof. Shattuck and his assistants. Classes have been trained in both theory and field practice, and the services of some of the students have already been sought by outside parties, in engineering work.

Prof. Snyder has also given much force to the several departments under his charge. The Bookkeeping classes are always crowded, as are also the classes in German; and the Military Drill has been maintained with more vigor than in any similar institution known to me. With the aid of the new Drill hall, planned in connection with the new Mechanic building, a much greater efficiency can be given to the Military course.

The success attending our efforts to meet fairly the legal requirements laid upon us, to include military tactics in our course of instruction, has suggested the propriety of asking Congress to give additional aid in a work of such national importance. I have sent accordingly to Hon. John A. Logan, late chairman of Committee on Military Affairs in the House of Representatives, the sketch of a plan for a National system of military education, which I herewith submit to you as a proposition touching the future prospects of this institution.

THE LABOR SYSTEM.

The labor system still costs us much care. Two difficulties meet us constantly: First, to provide a sufficiency of such labor as the students can perform; and second, to get such work as we do provide, well and economically performed. The practical value of the labor, as a necessary adjunct of a sound industrial education, can scarcely be over-stated. It would be well if, in all the industrial courses, practice should be required as a condition of graduation. In the Mechanical department Prof. Robinson has made "shop practice" a regular part of the course, not as an apprenticeship to a trade but as a necessary means of giving a practical understanding of the principles of mechanical philosophy. This shop practice is not counted nor paid for as labor, but the student is allowed to labor at other hours for wages. I would recommend that a similar plan be adopted in other departments. The student of Horticulture may be required to give a certain number of hours, during one or more terms, to practice in the green house, the gardens, nurseries, orchards and grafting rooms. The student of Agriculture may, in like manner and with like aim, be required to take daily practice, during certain terms, in the practical operations of the field, or in the stock barns. This would not prevent students working at other hours for wages.

THE APPLICATION FOR LEGISLATIVE AID.

The memorial prepared by direction of the Executive Committee has already been seen by most of the members of the Board, and its statements of our wants need not be repeated here. The bill appropriating $75,000 towards the erection of a new University building, to cost in all $150,000, and $25,000 for the erection and furnishing of a machine shop, has already passed the Senate, and is now pending before the House of Representatives, with a good prospect of speedily becoming a law. I call attention to it now, as its passage will impose at once upon the Board the duty of fixing sites, adopting plans, and preparing for contracts for the erection of the proposed buildings. Some preliminary plans have been prepared, but a most thorough and careful review of these plans will be required. Every feature ought to be scanned with the most jealous attention, both to secure perfection of design and to insure economy in the erection.

An appropriation has also been asked for the library and apparatus of instruction. The report of the Librarian shows the number of books now in library to be 4,538—an increase of 892 volumes during the year, 98 of which were received from donations. Besides these over two hundred pamphlets have been added to the collection.

The library is proving, as it ought, one of the most valuable agencies of instruction as well as a point of most attractive interest to our students, and its early and large increase will add greatly to the real power and value of the University. It will be remembered that the matriculation fees are set apart and apportioned to the library fund.

These fees, the past year, were absorbed in the general fund. They ought now to be added to the library appropriation for this year. We can not easily over-estimate the importance of a full supply of the best and freshest books to the student of science. The rapid and constant advance in the physical sciences—the new and surprising discoveries following each other in rapid succession—frequently invalidate old theories and conclusions, and compel continual reconstructions, making the old literature of these sciences imperfect and unsafe. Fresh books must be constantly added to our stores to keep us abreast with the progress of the scholarship of the age.

CONCLUSION.

I am glad to be able to state my earnest belief that the University is growing rapidly and deservedly in favor. The plans adopted by you at the outset, with such modifications of minor details as experience has suggested, have been found sound in practice as they were sound in theory. Much remains to be done, before we can fully realize all the great ends contemplated in those plans; but the good Providence that has thus far prospered us will still be over us, and the principles thus far found good will guide us to still greater success. I would indulge in no arrogant anticipations; but the future career of the University has an outlook so grand in itself, and so hopeful for humanity, that we may well pledge ourselves to new courage and larger efforts.

J. M. GREGORY.

LIBRARIAN'S REPORT.

DR. J. M. GREGORY, *Regent:*

The Librarian takes great satisfaction in reporting a respectable increase in the size and value of the Library, and more than corresponding increase in its use by the students.

The number of volumes reported last year was 3,480. It seems that some shelves were missed in the count, and that there were actually 3,646 at that time. The present number is 4,538, showing a clear increase of 892 volumes. Of these, 573 are included in the catalogue printed with the last annual report; 53 were bound from our own files, as shown in Schedule I; 168 were purchased since the catalogue was sent to press, as shown by Schedule II; 98 were obtained by donation and exchange, as shown by Schedule III.

Correspondence now in progress will doubtless add one or two hundred volumes with no expense except for transportation. I am confident that during the coming year I can effect an increase of more than one thousand volumes in the same way.

I have given considerable attention to the increase of our pamphlet collection. Its growth has been over two hundred the past year, and will probably be two thousand the next.

By Schedule IV it will be seen that sixty periodicals are received. Of these twenty-nine are agricultural, six mechanical, six scientific, eight literary, six news and political. It might be thought that this is too large a number, but the schedule shows that thirty of these are exchanges and cost nothing but postage and copies of our reports.

The books have been issued to readers on their filing checks with name and the book wished. The check is a charge for the book until it is taken off the file, and this is done when the book is returned. Books are freely taken from the room by teachers in the University, a record-book being kept for their use. Books are taken out by students to a very limited extent, each book so taken being charged to the Librarian or some other teacher. Some liberty of this kind seems indispensable, from the extensive reading demanded by some subjects, and the present arrangement seems to answer every purpose.

A very few books (about ten) cannot be accounted for. As the library is constantly used for a study room, and the shelves are easily reached, students some times, but very seldom, take books to their rooms without permission, trusting to a favorable opportunity to return them without detection. The utmost care will be taken to prevent this, but it cannot be absolutely avoided with the present limited room.

Considerable progress has been made in preparing a written catalogue, such as shall combine the advantages of directing readers with the least search to all the library contains on any given subject, and permitting the insertion of new books without breaking the arrangement. It is proposed to make this catalogue extend to the separate articles in periodical works, thus making it a perfect key to the whole library. I hope that the coming year will see this work complete for all that we shall then have.

Permit me to call your attention to the great interest which might be added to the annual report of the trustees, by inserting such discoveries, inventions and statistics as should make it a place among scientific periodicals. It would thus serve at once to answer the great purpose of the institution in preparing and disseminating useful knowledge, and enable us to make large and valuable exchanges for the library.

About seventy-five dollars is much needed for binding last year's periodicals, and twenty-five or fifty dollars would be well spent in binding the North American and London Quarterly Reviews, going back a number of years.

All which is respectfully submitted.

H. M. DOUGLASS,
Librarian.

The report was referred to the several Committees for action.

It was moved and seconded that the Regent be authorized to sell the S. E. ¼ of the N. E. ¼ of section 21, township 19, range 9, at $55 per acre.

The motion was referred to the Finance Committee.

The following report was next read:

REPORT OF THE TREASURER.

RECEIPTS.

1870.	March	9	Balance	$21,201	40
	April	1	Interest on $50,000 Sangamon county bonds	2,250	00
	May	28	Tuition, etc	174	00
	"	28	Coal collections	87	72
	"	28	Farm produce	214	86
	June	1	Interest on Champaign county bonds	10,000	00
	"	9	Sales from gardens	141	62
	"	9	Farm produce	44	10
	"	9	Coal collections	48	90
	"	9	Tuition, etc	202	16
	"	15	Interest on Morgan county bonds	2,500	00
	July	5	" Illinois state bonds	2,870	00
	"	5	" Chicago city bonds	875	00
	"	5	" Pike county bonds	2,000	00
	August	26	Rent	78	87
	"	27	Tuition, etc	151	50
	"	27	Farm produce	327	99
	"	27	Garden sales	182	08
	"	27	Rent for gardener's house	75	00
	"	27	Broken glass	6	05
	Sept.	1	Rent	429	09
	"	24	Farm produce sales	720	15
	"	24	Garden produce	79	21
	"	24	Fees, etc	1,247	00
	Oct.	1	Interest on Sangamon county bonds	2,250	00
	Nov.	12	Fees, etc	338	00
	"	12	Farm produce	250	80
	"	12	Sale of old stoves	17	50
	"	12	Rent of gardener's house	33	33
	"	12	Fees	3	50
1871.	January	2	Interest on Illinois State bonds	2,370	00
	"	2	" Chicago city bonds	875	00
	"	2	Farm sales	68	75
	"	2	Garden sales	92	38
	"	2	Coal sales	140	90
	"	2	Fees, etc	164	50
	"	2	From Mechanical department	161	92
	"	21	Fees	409	00
	"	21	Garden sales	4	43
	"	21	Mechanical department	150	00
	"	21	Rent	88	00

Receipts—Continued.

1871.	Feb.	11	Garden sales	$25 18
	"	11	Coal sales	113 75
	"	11	Farm sales	108 00
	"	11	From Mechanical department	25 00
	"	22	Rent	178 94
	"	28	Rent	578 06
	"	28	Fees	458 00
	"	28	Coal sales	42 30
	"	28	Farm sales	59 75
	"	28	Garden sales	48 98
	"	28	Old stoves	12 00
	"	28	From Mechanical department	176 58
	"	28	Interest on scrip moneys	1,120 00
	"	28	Rent	800 00
	"	28	Freights, (Illinois Central Railroad donation)	4,605 78
	"	28	Farm sales	218 77
	"	28	Coal sales	91 37
	"	28	Fees	40 75
	"	28	Garden sales	19 10
	"	28	Lumber, cement, etc	53 33
	"	28	Old furnaces	301 88
	"	28	Mechanical department	63 33
	"	28	Fees	282 00
	"	28	Farm produce	241 30
	"	28	Old furnaces	75 00
	"	28	State appropriation Agricultural department	12,500 00
	"	28	" " Horticultural department	10,000 00
			Total	$85,058 41

SUMMARY OF RECEIPTS.

For Balance	$21,201 40
" Interest on bonds	26,610 00
" Fees from students	3,461 91
" Farm produce	2,264 47
" Garden produce	704 75
" From Mechanical department	577 03
" Coal sold	590 06
" Rent for Griggs' farm	2,147 45
" Old stoves	29 50
" Old furnaces, lumber, etc	430 04
" Broken glass	6 06
" Freights, (Illinois Central Railroad donation)	4,605 78
" State appropriation Agricultural department	12,500 00
" " " Horticultural department	10,000 00
Total receipts	$85,058 41

DISBURSEMENTS.

For Appropriations of 1869	$482 57
" Expenses of Trustees	1,179 79
" Salaries	20,576 43
" Corresponding Secretary	670 00
" Treasurer	500 00
" Taxes on lands	1,551 29
" Fuel and lights	1,593 79
" Stationery and printing	1,136 58
" Building account	1,589 50
" Incidental expenses	1,177 68

Disbursements—Continued.

For Mechanical department	$1,824 66
" Farm labor	3,098 05
" Fire extinguishers	132 05
" Insurance	387 50
" Steam heating	1,638 07
" Lectures	940 15
On account state appropriations:	
" Agricultural department	22,535 57
" Horticultural department	12,792 19
" Chemical department	1,850 39
" Books and apparatus	3,881 62
Total	$78,933 08
Amount unexpended	$6,125 38

The report was received and referred to the Auditing Committee.

On motion of Mr. Pearson, a committee of three was appointed to present nominations of Standing Committees.

The chair thus appointed Messrs. Pearson, Lawrence and Cunningham.

On motion of Hon. C. R. Griggs, the Board proceeded to the biennial election of officers.

Mr. Brown, of Sangamon, was elected chairman, (the Regent retiring) and Messrs. Edwards and Cobb were appointed to act as tellers.

On motion of Mr. Blackburn, the election of Regent took place.

J. M. Gregory was put in nomination by Judge A. M. Brown; and was elected, unanimously, at the first ballot.

Hon. N. Bateman and Mr. Goltra were appointed a committee to notify Dr. J. M. Gregory of his re-election, who, when reinstalled in the chair, made a short and very appropriate address.

The oath of office was then administered to the Regent.

The election of officers then proceeding, Hon. Newton Bateman nominated Mr. J. W. Bunn, of Springfield, for Treasurer.

The teller announced as the result of the ballot for Treasurer

J. W. Bunn	15	ballots.
B. F. Harris, of Champaign	2	"
J. Bunn	1	"

The chairman declared J. W. Bunn elected.

Hon. W. C. Flagg was nominated for Corresponding Secretary, and elected unanimously at the first ballot.

Dr. Scroggs nominated Prof. E. Snyder for Recording Secretary, who was also elected unanimously.

On motion of Mr. Griggs, the Board adjourned to meet in the evening at eight o'clock.

EVENING SESSION.

The Board reassembled at 8 o'clock P. M., the Regent in the chair. Messrs. Mahan, Pullen and Van Osdel arrived and took their seats. The following statement of the Bookkeeper was then read:

STATEMENT OF BOOKKEEPER.

To the Regent of the Industrial University:

I have the honor to submit to you, for the information of the Board of Trustees, the following financial statements:

I. Statement of the real estate, personal property and other funds of the Illinois Industrial University.

II. Statement of expenditures for the year ending March 1st, 1871.

III. Statement of expenditures from State appropriations to March 1st, 1871, and unexpended balance.

IV. Statement of all warrants drawn during the year and abstract of same.

V. Statement of the amount paid for students' labor in the several departments.

Statement of the Real Estate and Personal Property of the Illinois Industrial University, for the year ending March 1st, 1871.

BUILDINGS AND APPARATUS FOR INSTRUCTION.	
University building	$50,000
Ornamental and parade grounds	10,000
Library, 4.600 volumes	10,000
Chemical Laboratory	3,500
Cabinets	2,500
Engineering instruments	1,000
Mechanical shop	
Building machinery, tools, material	3,500
Furniture and fixtures	3,000
	$83,500
AGRICULTURAL DEPARTMENT.	
410 acres of land, at $75	$30,750
Two farm houses	1,500
Two barns	16,500
Teams, $1,000; colts, $200; hogs, $850; 60 steers, $3,500; produce unsold $1,550; implements, $1,500	8,100
80 acres, Experimental farm, at $120	12,000
240 acres (Griggs farm) at $60	14,400
	$83,250
HORTICULTURAL DEPARTMENT.	
190 acres, gardens and orchards, partly drained, valued at	$24,000
House on orchards	2,850
House on gardens	1,200
Barn	650
Green house	3,430
Propagating house	800

Statement—Continued.

Implements and tools	$500 00
Teams	650 00
Produce on hand	700 00
Nursery stock	3,900 00
Bedding plants in greenhouse	600 00
	$38,000 00

INTEREST BEARING FUNDS.

Champaign county bonds, at 10 per cent	$100,000 00
Sangamon county bonds, at 9 per cent	50,000 00
Morgan county bonds, at 10 per cent	25,000 00
Chicago city water bonds, at 7 per cent	25,000 00
Pike county bonds, at 10 per cent	30,000 00
Illinois State bonds, at 6 per cent	79,000 00
Proceeds of scrip	44,821 60
24,480 acres scrip on hand, valued	22,032 00
Located in Nebraska, 9,460.09 acres; in Minnesota, 15,973.67 acres; total, $25,433 acres, at $2	50,866 00
Unexpended Illinois Central Railroad donation	40,000 00
160 acres Griggs farm, sold at $60	9,600 00
	$476,319 60

RECAPITULATION.

Buildings and apparatus	$83,500 00
Agricultural department	83,250 00
Horticultural department	38,000 00
Bonds and other funds	476,319 60
	$681,069 60

Statement of the Current Expenditures to March 1st, 1871.

Board expense		$1,179 79
Salaries		20,576 42
Regent J. M. Gregory	$4,000 00	
Prof. W. M. Baker	2,000 00	
Prof. A. P. S. Stuart	2,000 00	
Prof. W. F. Bliss	1,000 00	
Prof. S. W. Robinson	2,000 00	
Prof. T. J. Burrill	1,800 00	
Prof. S. W. Shattuck	1,800 00	
Prof. E. Snyder	1,800 00	
Mr. J. Bellangee	1,000 00	
Mr. H. M. Douglass	1,000 00	
Mr. R. B. Warder	500 00	
Mr. I. D. Foulon	300 00	
Dr. H. J. Detmers	600 00	
Prof. Sanborn Tenney	600 00	
Lectures in January, 1870	176 42	
Fuel and lights		1,593 70
Gas	115 25	
Sundry expenses	32 85	
Coal { coal at mine	752 20	
Coal { freight	619 90	
Coal { hauling	73 50	
Stationery and printing		1,186 58
Stationery	40 45	
Printing reports and catalogues	781 90	
Other printing and advertising	364 23	

Statement—Continued.

Building and repairs		$1,609 50
Painting and glazing	$73 29	
Improvements	454 30	
Cleaning (sweeping, etc.)	114 77	
Whitewashing and scrubbing	173 75	
Repairs	308 09	
Raising shop	80 00	
Coal-house	109 60	
Sidewalks	123 00	
Shop yards and shed	172 70	
Mechanical department		1,324 66
Materials and repairs	365 87	
Work in shop	532 30	
Foreman's salary	972 22	
Carpenter work	18 95	
Hauling	6 00	
	$1,895 34	
By work for other departments	570 68	
Farm account		3,093 05
Blacksmithing and repairs	171 89	
Superintendent's salary	660 00	
Farm laborers	2,593 41	
	$3,425 30	
By hauling for buildings	332 25	
Incidental expenses		1,177 63
Postage	88 10	
Express	41 20	
Janitor's wages	220 48	
Janitor work by students	224 85	
Sundry other expenses	603 00	
Bills unpaid		482 87
Fire extinguishers		128 06
Salary of Treasurer		500 00
Salary of Corresponding Secretary		670 00
Taxes on lands		1,561 39
Insurance		337 50
Steam heating apparatus		1,638 07
Lecture—Dr. Miles, $626 10; Dr. Hull, $250 00; sundry, $64 05		940 15
Total		$37,923 36

Statement of Expenditures from the Appropriations made by the Legislature in March, 1869.

Agricultural department		$24,318 59
I. Barn	$9,914 93	
II. Barn	6,392 08	
Tools, fixtures and implements	1,518 03	
Horses, cattle and hogs	4,758 80	
Seeds	375 28	
Hedges, roads, etc	562 68	
Work in improving wells, cisterns, draining, etc	1,645 27	
Corn crib	151 52	
Horticultural department		18,151 [illegible]
Seed and bulbs	171 34	
Trees and grapes	2,738 56	
Gardener's house	1,081 58	
Gardener's barn	628 04	
Labor	1,818 48	

Statement—Continued.

Salaries of foremen	$2,539 43	
Teams, tools and implements	753 75	
Fences, roads and bridges	361 74	
Freight	349 60	
Tile and drainage	1,235 27	
Sundries	207 01	
House on orchard	2,827 07	
Greenhouse	3,440 06	
Chemical department		$3,035 95
Fixtures	540 19	
Chemicals	680 41	
Apparatus	1,815 35	
Books and apparatus		10,078 88
Fixtures	849 30	
Insurance, express, etc	510 39	
Books	5,891 17	
Models from Mechanical department	2,000 00	
Cabinet	837 02	
Total		$55,580 80
Balance		4,419 70

Statement of Expenditures during the year ending March 1st, 1871, *as per Warrants* 1 *to* 746, *inclusive.*

oard expense	$1,179 79	
alary of Faculty, etc	20,576 42	
alary Treasurer	500 00	
alary Corresponding Secretary	670 00	
axes on land	1,551 29	
uel and light	1,593 70	
ationery and printing	1,136 58	
uilding account	1,589 50	
cidental expense	1,177 63	
echanical department	1,324 66	
rm labor	3,098 05	
e extinguisher	132 05	
eam-heating apparatus	1,688 07	
urance	337 50	
ls unpaid	482 87	
tures in 1871	940 15	
		$37,978 26
e appropriation Agricultural department	22,535 57	
e appropriation Horticultural department	12,792 19	
mical laboratory	1,850 39	
ks and apparatus	3,831 62	41,009 77
Total		$78,988 03

RBANA, *March* 14*th*, 1871.

E. SNYDER.

Statement of Warrants.

No.	Date.		To whom.	For what.	Amount.	
1	March	9	Prof. Sanborn Tenney...	Thirty lectures delivered.............	$600	00
2	"	9	J. H. Pickard..........	Expenses to meeting................	17	50
3	"	9	J. H. Pickrell...........	" "	12	30
4	"	9	Dr. Wm. Kile...........	" "	8	75
5	"	9	A. M. Brown............	" "	23	15
6	"	9	J. S. Johnson..........	" "	25	00
7	"	9	A. Blackburn............	" "	28	30
8	"	9	Samuel Edwards.......	" "	24	00
9	"	9	" "	Trees for nursery..................	27	00
10	"	9	W. C. Flagg............	Payment of lecture expense..........	176	85
11	"	9	J. P. Slade	Expense to meeting.......	23	45
12	"	9	J. M. Pearson..........	" "	19	95
13	"	9	Paul R. Wright	" "	27	75
14	"	9	B. Pullen	" "	21	00
15	"	9	M. C. Goltra............	" "	11	00
16	"	9	Mason Brayman.........	" "	27	75
17	"	9	L. Lawrence............	" "	25	85
18	"	9	O. B. Galusha	" "	11	00
19	"	9	W. C. Flagg............	Corresponding Secretary's salary......	470	00
20	"	9	J. W. Bunn	Treasurer's salary.	500	00
21	"	10	Trevitt & Green	Hardware............................	62	81
22	"	10	J. M. Gregory....... ..	Salary, March	333	34
23	"	10	W. F. Bliss............	" "	166	66
24	"	11	Illinois Central R. R. Co	Advanced freights	5	80
25	"	11	H. K. Vickroy..........	Expenses and labor.................	10	94
26	"	11	Champaign Gas Company	Gas fixtures	181	22
27	"	11	Union Coal Company ...	Two cars coal	32	00
28	"	11	W. H. Merritt.....	Labor....	34	19
29	"	11	Henry Swannell	Oil, paint, wall paper......., ...	14	84
30	"	11	E. V. Peterson..	Curtains for chapel.................	48	40
31	"	11	J. M. Gregory	Expense for purchases in Europe......	250	00
32	"	14	Wm. M. Baker	Salary, March	166	66
33	"	14	J. C. Burroughs........	Expense to meeting.................	17	25
34	"	14	Flynn & Scroggs.......	Printing	44	10
35	"	15	M. E. Lasher	Raising carpenter shop..............	10	00
36	"	16	M. J. & J. F. Jeffrey	Castings and machinery	35	00
37	"	16	Angle & Sabine	Grass and clover seed	110	28
38	"	18	S. W. Robinson.........	Material for models....	34	75
39	"	21	Col. Barringer	Gas pipes..........................	115	00
40	"	21	Jas. Vick................	Flower seeds.......................	5	00
41	"	23	T. J. Burrill............	Stove and pipe......................	8	00
42	"	23	J. Bellangee...........	Drawing paper......	8	00
43	"	25	American Express Co ...	Reports from Springfield	67	50
44	"	27	S. L. Graves & Son.....	Turning-lathe and saws..............	100	00
45	"	29	J. J. Thomas & Co......	Grass harrow and freight.............	23	25
46	"	30	E. Snyder	Salary, March......................	150	00
47	"	30	J. Bellangee	" "	83	33
48	"	30	A. P. S. Stuart.........	" "	166	66
49	"	30	S. W. Robinson........	" "	166	66
50	"	30	S. W. Shattuck.........	" "	150	00
51	"	30	T. J. Burrill	" "	250	00
52	"	30	H. Douglass	" "	83	33
53	"	30	J S. Searfoss....	" "	83	33
54	"	30	H. K. Vickroy..........	" "	83	33
55	"	30	T. Franks	" "	75	00
56	"	30	R. B. Warder..........	" "	83	33
57	"	30	Pat. Lamb.............	" "	40	00
58	"	30	Lowenstern & Graham...	Muslin and thread	[illegible]	60
59	April	1	Prof. W. F. Bliss	Salary, April......................	166	66
60	"	1	Fuller, Finch & Fuller...	Glass for green house..............	243	84

Statement—Continued.

No.	Date.		To whom.	For what.	Amount.
61	April	1	David M. Ford	Material and machinery	$38 52
62	"	1	Larrabee & North.	Tools and materials	89 86
63	"	1	Prof. E. Snyder	Payment of labor	352 56
64	"	1	Champaign Gas Company	Gas for March	12 80
65	"	5	W. H. Merritt	Work on orchards	24 69
66	"	5	H. K. Vickroy	Petty expense	3 65
67	"	7	Luther W. Lawrence	Expense to meeting	25 10
68	"	7	A. M. Brown	" "	27 50
69	"	7	J. H. Pickrell	" "	13 05
70	"	7	M. C. Goltra	" "	16 50
71	"	9	E. Snyder	Petty expenses	27 44
72	"	9	J. S. Upstone	Farm laborers pay and board	132 17
73	"	9	W. J. Jeffrey	Engine castings	128 88
74	"	9	Cobb & Warriner	Norway oats	26 00
75	"	9	Union Coal Company	Two cars coal	30 00
76	"	9	E. Eldred	Lumber for barns	206 45
77	"	9	C. Foote	2,000 brick for hot house	20 00
78	"	9	G. S. Upstone	Laborers pay and board	104 44
79	"	9	Prof. W. F. Bliss	Postage stamps	5 50
80	"	9	A. Thomson	Work on machinery	84 00
81	"	13	F. M. & A. Avey	Blacksmithing	7 85
82	"	26	Chas. Quinn	One span of horses	250 00
83	"	26	Prof. W. M. Baker	Salary, April	166 66
84	"	26	E. L. Brown	Expense to meetings	42 00
85	"	26	S. M. Newby	Express on seed corn	1 50
86	"	26	Daniel Wicks	Barley for seed	64 30
87	"	26	F. K. Phœnix	Bill of Trees	79 10
88	"	26	R. Douglas & Son	" "	48 50
89	"	26	W. N. Nourse	" "	48 25
90	"	26	Edgar Saunders	Two dozen dahlias	4 00
91	"	26	Hovey & Co	One lawn roller	30 00
92	"	26	Hulburd, Herrick & Co.	Nails for green house	28 00
3	"	26	James & Co.	Belting	9 17
4	"	27	Lacon Nursery	Bill of trees	53 80
5	"	27	Jennings & Wagdin	Flower pots	9 15
6	"	27	George Ely	Blacksmithing	24 20
7	"	27	Prof. A. P. S. Stuart	Salary, April	166 66
8	"	27	Prof. S. W. Robinson	" "	166 66
	"	27	Prof. T. J Burrill	" "	150 00
	"	27	Prof. S. W. Shattuck	" "	150 00
	"	27	Prof. E. Snyder	" "	150 00
	"	27	Jas Bellangee	" "	83 33
	"	27	H. M. Douglass	" "	83 33
	"	27	R. B. Warder	" "	33 33
	"	27	J S. Searfoss.	" "	83 33
	"	27	Thos. Franks	" "	75 00
	"	27	H. K. Vickroy	" "	83 33
	"	27	G. S. Upstone	" "	60 00
	"	27	Patrick Lamb	" "	40 00
	"	27	J. M. Gregory	" "	833 33
	"	28	American Express Co	Express on books	11 75
	"	28	Purdy & Hance	Bill of small fruit	19 05
	May	2	W. F. Bliss	Salary, May	166 66
	"	2	G. S. Upstone	Wages of farm hands	57 10
	"	2	" "	Board of farm hands	41 58
	"	2	J. B. Phinney	Seed corn	20 00
	"	2	American Express Co	Express on grapes	12 05
	"	2	Nicolet & Schoff	Printing 5,000 Regent's report	131 90
	"	2	E. Snyder	Payment students labor	500 58
	"	3	Samuel Edwards	Bill of trees	425 25
	"	3	A H. Bridgman	Books for library	5 00

Statement—Continued.

No.	Date.	To whom.	For what.	Amount.
122	May 8	Champaign Gas Company	Gas for April	$11 90
123	" 8	Bicknell & Co	Books for library	27 00
124	" 8	Nash & Fleming	Sand for green house	23 75
125	" 8	H. K. Vickroy	Petty expense	14 18
126	" 8	T. J. Burrill	" "	9 10
127	" 8	H. K. Hosford	Lanterns, globes, chimneys	3 00
128	" 8	W. H. Merritt	Work for April	34 65
129	" 7	J. Blakesley	" "	31 10
130	" 7	J. Bellangee	Expense on plans for barns	6 50
131	" 9	A. Thomson	Salary for April	83 33
132	" 12	J. H. Pickrell	Board expenses	7 05
133	" 12	M. C. Goltra	" "	10 00
134	" 12	P. R. Wright	" "	22 90
135	" 13	J. M. Gregory	Salary, May	333 33
136	" 13	" "	Balance on bill of books	12 13
137	" 13	S. W. Shattuck	Salary, May	150 00
138	" 13	Park & Royer	Lumber	19 87
139	" 13	E. Snyder	Petty expense	40 00
140	" 13	W. C. Flagg	Corresponding Secretary's salary	50 00
141	" 13	E. Snyder	Contingent fund	75 00
142	" 13	T. Franks	Petty expense	9 85
143	....	(Destroyed)		....
144	May 16	J. E. Cantrell	Material for wagon	70 00
145	" 16	Jos. McCorkle	Hardware	18 34
146	" 16	G. S. Upstone	Petty expense	4 80
147	" 16	Nash & Fleming	Three yards of sand	5 25
148	" 16	Beach & Co	Coal	21 25
149	" 16	Union Coal Company	Two cars coal	30 00
150	" 16	A. Thomson	Salary, March 10th to 31st	56 55
151	" 16	M. E. Lapham	Lime and stone	17 81
152	" 16	Hall, Kimbark, & Co	Machinery	39 65
153	" 16	T. J. Burrill	Specimens for cabinet	4 45
154	" 16	Fuller, Finch & Fuller	Paint, glass and alcohol	24 79
155	" 16	S. Edwards	Bill of trees	35 10
156	" 16	J. S. Sherman	5,000 apple stocks	25 00
157	" 16	Store, Harrison & Co	6,000 chestnuts	61 50
158	" 16	W. A. Nourse	White ash seedlings	50 00
159	" 16	J. M. Gregory	Books for library	427 50
160	" 20	H. Shepherd	15,000 brick	165 00
161	" 20	Jas. Rolfe	Mason work on green house	232 94
162	" 20	J. W. Boatman & Co	14,500 Osage orange plants	29 00
163	" 27	N. W. Fire Extingu'er Co	Three Babcock extinguishers	132 [illegible]
164	" 27	J. M. Gregory	Petty expense	23 20
165	" 31	W. M. Baker	Salary for May	166 66
166	" 31	A. P. S. Stuart	" "	166 66
167	" 31	S. W. Robinson	" "	166 66
168	" 31	T. J. Burrill	" "	150 00
169	" 31	E. Snyder	" "	150 00
170	" 31	J. Bellangee	" "	83 33
171	" 31	R. B. Warder	" "	33 33
172	" 31	H. M. Douglass	" "	83 33
173	" 31	A. Thomson	" "	83 33
174	" 31	J. S. Searfoss	" "	83 33
175	" 31	H. K. Vickroy	" "	83 33
176	" 31	Thos. Franks	" "	75 00
177	" 31	G. S. Upstone	" "	60 00
178	" 31	Pat. Lamb	" "	40 00
179	" 31	G. S. Upstone	Payment of farm labor	69 [illegible]
180	" 31	" "	Board of farm laborers	61 [illegible]
181	" 31	Jas. Blakesley	Work on gardens	52 [illegible]
182	" 31	W. H. Merritt	" "	36 [illegible]

Statement—Continued.

No.	Date.		To whom.	For what.	Amount.	
183	May	31	E. V. Peterson	Books for library	$441	27
184	June	7	A. P. S. Stuart	Salary, June, July, August	500	00
185	"	7	R. B. Warder	" " "	100	00
186	"	7	E. Snyder	Payment students labor	493	60
187	"	7	W. F. Bliss	Salary, June, July, August	500	00
188	"	7	W. M. Baker	" " "	500	00
189	"	7	S. W. Shattuck	" " "	450	00
190	"	7	A. M. Brown	Expenses to meeting	29	40
191	"	7	P. R. Wright	" "	24	75
192	"	7	M. C. Goltra	" "	10	00
193	"	7	T. J. Burrill	Salary, June, July, August	450	00
194	"	7	E. Snyder	" " "	450	00
195	"	7	J. Bellangee	" " "	250	00
196	"	7	C. Sullivan	Excavating barn cellar	200	00
197	"	7	Fuller, Finch & Fuller	Oil and paints for barns	63	38
198	"	7	C. G. Larned	Hardware and repairs	40	42
199	"	7	C. F. A. Hinrichs	Insect pins for cabinet	5	20
200	"	7	A. S. Davies	Double shovel plow	6	00
201	"	7	Chaddon & Hesse	Sawing timber for barn	10	36
202	"	7	David Ford	Castings for engine	2	42
203	"	8	Hovey & Co	Bluegrass seed	2	25
204	"	8	Angle & Sabine	Seed and Tile	23	75
205	"	8	Champaign Gas Company	Gas for June	2	80
206	"	8	F. M. & A. Avey	Blacksmithing	10	30
207	"	8	E. V. Peterson	Stationery, crayons, etc	16	70
208	"	8	H. M. Douglass	Salary, June, July, August	250	00
209	"	8	T. J. Burrill	Petty expense	21	10
210	"	8	E. Snyder	" "	56	55
211	"	8	S. W. Robinson	Salary, June, July, August	500	00
212	"	8	Dr. J. M. Gregory	" " "	1,000	00
213	"	8	Patrick Lamb	Wages for 11 days	14	70
214	"	12	J. R. Harris	Two horses	350	00
215	"	14	J. Bellangee	Work on farm cistern	7	15
216	"	21	W. H. Crayne	Work in shop	28	13
217	"	21	Wicks & Watson	Hauling stone	50	00
18	"	24	W. Dowell	Painting on barn	13	70
19	"	27	O. W. Hammond	Work in shop	23	25
20	"	30	Harry Cleveland	Work on farm barn	10	38
21	"	30	John Crawley	" "	10	45
22	"	30	H. E. Robbins	Work on models	21	25
23	"	30	Rudolf Jeorg	" "	10	37
4	"	30	N. C. Ricker	Work on green house	30	25
5	"	30	J. E. Cantrell	Balance for wagon	70	00
6	July	1	Wilson Dowell	Work in shop	27	48
7	"	1	W. H. Crayne	" "	21	94
	"	1	J. A. Ockerson	" "	19	50
	"	1	H. V. Moore	Barrels and jars	7	32
	"	1	G. S. Upstone	Payment of day laborers	12	26
	"	1	" "	Payment of farm hands	88	90
	"	1	" "	Board of farm hands	80	51
	"	1	J. S. Searfoss	Salary for June	83	33
	"	1	A. Thomson	" "	83	33
	"	1	H. K. Vickroy	" "	83	33
	"	1	Thos. Franks	" "	75	00
	"	1	G. S. Upstone	" "	60	00
	"	1	R. Peacock	Lumber for barn	1,000	00
	"	1	Jas. Blakesley	Work on gardens	83	50
	"	1	Jas. C. Craver	" "	26	90
	"	1	M. B. Burwash	" "	26	90
	"	2	C. D. Hays	Work in gardens June	24	25
	"	2	T. J. Sloan	" " "	26	93

Statement—Continued.

No.	Date.		To whom.	For what.	Amount.
244	July	2	W. H. Merritt	Work in gardens, June	234 61
245	"	6	E. V. Peterson	Books for library	225 00
246	"	6	M. C. Goltra	Expenses to meeting	10 00
247	"	6	A. M. Brown	" "	25 51
248	"	6	P. R. Wright	" "	23 00
249	"	6	Johnston, Huntley & Co.	Agricultural implement	4 06
250	"	6	Ellwanger & Barry	Grapes	32 75
251	"	6	David M. Ford	Castings for engine	3 63
252	"	6	Kankakee Stone & Li'e Co	Lime and cement	102 00
253	"	6	Larrabee & North	Tools and materials	23 04
254	"	6	G. E. Hessel	Harness and repairs	77 65
255	"	6	M. E. Lapham & Co	Thirty cars of stone	420 00
256	"	6	J. M. Gregory	Traveling expense	19 45
257	"	6	Union Coal Company	One car of coal	15 00
258	"	6	F. M. & A. Avey	Blacksmithing	16 25
259	"	6	E. Snyder	Petty expense	68 71
260	"	6	Angle & Sabine	Wagon bed, pump, &c	31 00
261	"	6	Fuller, Finch & Fuller	Paint brushes	4 76
262	"	6	J. H. Pickrell	Expense to meeting	7 53
263	"	8	H. Shepherd	39,585 brick	395 85
264	"	8	W. H. Crayne	Work in shop	6 75
265	"	8	D. Wicks & Walton	Hauling for barns	80 00
266	"	8	E. Fryer	Mason work	200 00
267	"	11	Illinois Central R. R. Co.	Back freights	28 96
268	"	11	Hon. E. Rummel	Packing expenses for catalogue	6 50
269	"	12	D. M. Ford	Three way cocks for engine	4 00
270	"	12	W. Parritt	Piping for engine	3 00
271	"	12	Flynn & Scroggs	Advertising and printing	7 75
272	"	12	Wicks & Watson	Hauling for barn	16 50
273	"	23	Ebenezer Fryer	Mason work	400 00
274	"	23	Patrick Lamb	Work at first barn	49 00
275	"	23	J. Bellangee	Petty expenses	7 50
276	"	23	D. Owens	Digging cellar	50 00
277	"	26	H. M. Douglass	Books for library	16 50
278	"	26	T. Collins	Digging wells	24 00
279	"	26	John Furst	Hauling stone	20 00
280	"	27	J. S. Searfoss	Salary, July	83 33
281	"	27	P. Packard	Hauling stone	12 00
282	"	27	Wicks & Watson	" "	96 25
283	"	27	Patrick Lamb	Work at shop	10 00
284	"	27	A. Herbert	Digging cistern	43 00
285	"	27	H. Cleveland	Work on Experimental farm	14 00
286	August	1	G. S. Upstone	Payment of farm hands	305 36
287	"	1	G. S. Upstone	Petty expense	17 25
288	"	1	G. S. Upstone	Board of farm hands	159 65
289	"	1	D. Owens	Mason work	100 00
290	"	1	John Furst	Hauling stone	30 00
291	"	1	J. H. McKinzie	Hauling sand	5 97
292	"	1	Jacob McKinzie	22½ yards sand	19 33
293	"	1	George Eli	Iron for braces	11 15
294	"	1	James Bellangee	Salary as Superintendent	100 00
295	"	1	J. W. Bunn	Draft on London	306 [illegible]
296	"	1	H. N. Holden	Wood and material	33 [illegible]
297	"	1	M. E. Lapham & Co	Lime and stone	308 [illegible]
298	"	1	W. M. & J. F. Olcott	Thirty tons hard coal	270 00
299	"	1	J. N. Wharton	Work in shop	20 [illegible]
300	"	1	J. H. Pancake	" "	10 [illegible]
301	"	1	W. Moses	Digging well	8 [illegible]
302	"	1	J. A. Ockerson	Carpenter work	37 50
303	"	1	O. W. Hammond	" "	43 50
304	"	1	H. E. Robbins	Work in shop	29 62

Statement—Continued.

No.	Date.	To whom.	For what.	Amount.
305	August 1	N. C. Ricker	Work in shop	$68 75
306	" 1	W. Dowell	Painting	18 00
307	" 1	Larrabee & North	Tools and materials	16 89
308	" 1	Fuller, Finch & Fuller	Lead and putty	17 38
309	" 1	Johnston, Huntley & Co	Agricultural implements	17 70
310	" 1	Trevitt & Green	Hardware	60 24
311	" 1	Thomas Franks	Salary, July	75 00
312	" 1	H. K. Vickroy	" "	83 33
313	" 1	G. S. Upstone	" "	60 00
314	" 2	J. J. Crawley	Work at barn	18 02
315	" 2	T. J. Sloan	Work in orchard	35 00
316	" 2	W. H. Merritt	" "	36 00
317	" 2	A. L. Rader	" "	6 75
318	" 2	C. S. Emerson	" "	14 25
319	" 2	A. Thomson	Salary, July	83 33
320	" 3	F. M. & A. Avey	Blacksmithing	28 48
321	" 3	J C. Craver	Work in garden	35 00
322	" 3	M. J. Blakesley	" "	29 10
323	" 3	M. B. Burwash	" "	35 00
324	" 3	C I. Hays	" "	30 00
325	" 3	Jas. Cunningham	Barn foundation	10 00
326	" 5	C. W. Ashby	Work on barn	8 12
327	" 5	D. Owens	Mason work	75 00
328	" 5	T. Collins	Digging well	14 00
329	" 5	E. Friar	Mason work	100 00
330	" 5	V. Moses	Work at barns	21 00
331	" 5	J. Furst	Hauling stone	25 00
332	" 13	J. French	Carpenter work	22 00
333	" 13	D. Owens	Mason work	65 00
334	" 13	Dickinson & Collier	Carpenter work	500 00
335	" 13	J. Dick	Mason work	6 00
336	" 15	W. Parrit	Carpenter work	21 00
337	" 15	J. Burt	Threshing and reaping	30 50
338	" 15	Pat. Lamb	Work at barns	28 25
339	" 15	R. B. Musson	Plastering	23 50
340	" 16	W. Dowell	Painting	10 00
341	" 16	A. S. Barnes & Co	Freights on books	19 31
342	" 16	Fuller, Finch & Fuller	Glass for greenhouse	61 85
343	" 16	S Hook	Teaming	22 00
344	" 20	D. Owens	Mason work	50 00
345	" 20	J. French	Carpenter work	16 50
346	" 23	D. Owens	Mason work	50 00
347	" 25	A. M Brown	Board expense	28 90
348	" 25	P. R. Wright	" "	24 75
349	" 25	M. C. Goltra	" "	12 00
350	" 25	L. W. Lawrence	" "	26 00
351	" 26	Dodson & Hodges	Hardware	52 05
52	" 26	Johnston, Huntley & Co.	Implements and repairs	2 55
53	" 26	Fuller, Finch & Fuller	Paints	34 13
54	" 26	Fuller, Finch & Fuller	"	101 62
55	" 26	W. A. James & Co	Crucibles	2 40
56	" 26	J. H. Detmers	Traveling expense	7 55
57	" 26	T. J. Burrill	Petty expense	12 75
8	" 26	D. Van Nostrand	Books for laboratory	130 65
9	" 26	B. Westerman & Co	" "	52 05
0	" 26	D. Van Nostrand	" "	12 23
l	" 26	American Express Co	" "	4 00
2	" 27	J. Knowlen	Work on barn	2 50
	" 27	Pat. Lamb	" "	14 00
	" 27	W. H. Silva	Hauling	26 58
	" 27	E. Snyder	Petty expense	98 73

Statement—Continued.

No.	Date.		To whom.	For what.	Amount.
366	Aug.	27	Trevitt & Green	Hardware	$178 91
367	"	30	C. G. Larned	Guttering and roofing	88 99
368	"	30	M. E. Lapham & Co	Stone and lime	78 85
369	"	30	Thos. Franks	Salary, August	75 00
370	"	30	G. H. Pancake	Work on models	10 00
371	"	30	H. E. Robbins	" "	36 00
372	"	30	J. E. Cantrell	" "	25 00
373	Sept.	1	G. S. Upstone	Petty expenses	4 00
374	"	1	" "	Board of farm hands	115 00
375	"	1	" "	Payment of farm hands	147 31
376	"	1	" "	Salary, August	60 00
377	"	1	J. S. Searfoss	" "	83 33
378	"	1	H. K. Vickroy	" "	83 33
379	"	1	A. Thomson	" "	83 33
380	"	1	Walker Brothers	Turning, etc	13 25
381	"	1	W. Dowell	Painting and glazing	56 00
382	"	1	G. R. Pfeiffer	Books on veterinary surgery	12 00
383	"	1	N. C. Ricker	Carpenter work	63 75
384	"	3	J. Q. Smith	5,500 feet oak plank	110 00
385	"	3	Webster, Davies & Dunbar	Lime and cement	240 50
386	"	3	R. Warder	Work in orchard	1 00
387	"	3	W. H. Merritt	Work in garden	23 28
388	"	3	T. J. Sloan	Work in orchards	23 31
389	"	3	J. C. Craver	Work in garden	36 00
390	"	3	C. I. Hays	" "	30 00
391	"	3	M. B. Burwash	" "	35 00
392	"	3	J. Blakesley	" "	33 50
393	"	3	J. K. French	Carpenters work	36 75
394	"	5	Flynn & Scroggs	Printing and advertising	24 50
395	"	5	A. N. Kellogg	Advertising	100 00
396	"	5	R. Peacock	Lumber	1,500 00
397	"	5	H. N. Holden	Material	16 58
398	"	5	Hulburd, Herrick & Co.	Window bolts	6 50
399	"	6	W. Parritt	Carpenter work	21 00
400	"	6	E. Lynch	" "	9 45
401	"	6	Fuller, Finch & Fuller	Paints	40 15
402	"	6	F. W. Satterlee	Whitewashing	100 00
403	"	6	J. W. Bunn	Draft for books	230 00
404	"	6	Dickerson & Collier	Carpenter work	500 00
405	"	6	F. M & A. Avey	Blacksmithing	17 00
406	"	7	O. W. Hammond	Carpenter work	54 00
407	"	7	J. M. Gregory	Salary, September	333 33
408	"	10	G. S. Upstone	Threshing	106 50
409	"	10	D. Owens	Mason work	100 00
410	"	12	J. N. Wharton	Work on models	47 82
411	"	12	Harry Cleveland	Work at barns	56 00
412	"	14	J. Teeple	Work in shop, etc	44 00
413	"	14	N. C. Ricker	Carpenter work	11 75
414	"	14	J. A. Ockerson	" "	82 50
415	"	14	W. Dowell	Painting	25 00
416	"	14	E. Snyder	Payment for scrubbing	73 75
417	"	14	S. Hook	Teaming	42 50
418	"	14	Fuller, Finch & Fuller	Glass	11 88
419	"	14	Nicolet & Schoff	Printing	14 00
420	"	14	George Eli	Blacksmithing	18 95
421	"	15	J. E Cantrell	Work in shop	54 50
422	"	16	D. Owens	Mason Work	287 00
423	"	16	T. J. Burrill	Traveling expense	7 30
424	"	16	H. L. Town	Stove and furniture	14 70
425	"	16	C. I. Hays	Work in garden	10 35
426	"	16	J. T. Wier	Plastering	46 30

Statement—Continued.

No.	Date.	To whom.	For what.	Amount.
427	Sept. 17	J. F. Luhme	Chemicals	$64 62
428	" 17	T. J. Sloan	Work on orchards	8 70
429	" 17	R. Peacock	Lumber	1,800 00
430	" 17	Flynn & Scroggs	Printing	44 50
431	" 19	Wilson Dowell	Painting	36 00
432	" 19	Walworth, Twohig & Furse	Boiler and pipes	1,000 00
433	" 23	J. H. Pickrell	Board expense	16 55
434	" 23	A. M. Brown	" "	29 40
435	" 23	H. Shepherd	31,082 brick	310 82
436	" 24	E. Snyder	Petty expense	90 61
437	" 24	C. S. Emerson	Work in orchards	15 00
438	" 24	D. Owens	Furnace flue	30 00
439	" 24	N. C Ricker	Moulding	10 59
440	" 24	Hon. N. Bateman	Board expense	33 63
441	" 24	J. S. Searfoss	Salary, September	83 33
442	Oct. 1	E. Friar	Mason work	290 98
443	" 1	Jas. Bellangee	Salary, September, and as Superintend't	183 33
444	" 1	S. W. Shattuck	" " " "	150 00
445	" 1	D. Owens	Mason work	110 62
446	" 1	A. P. S. Stuart	Salary, September	166 66
447	" 1	H. M. Douglass	" "	83 33
448	" 1	R. B. Warder	" "	50 00
449	" 1	H. J. Detmers	" "	100 00
450	" 1	I. D. Foulon	" "	50 00
451	" 1	T. J. Burrill	" "	150 00
452	" 1	H. K. Vickroy	" "	83 33
453	" 1	Pat. Lamb	Work at barn and building	52 53
454	" 1	A. Thomson	Salary, September	83 33
455	" 1	G. S. Upstone	Petty expense	19 45
456	" 1	" "	Pay of farm hands	65 16
457	" 1	" "	Board of farm hands	81 69
458	" 1	" "	Salary, September	60 00
459	" 1	S. W. Robinson	" "	166 66
460	" 1	Rudolph Jeorg	Work on farm	51 06
461	" 1	Wm. M. Baker	Salary, September	166 66
462	" 1	W. H. Merritt	Work on orchard	31 85
463	" 1	Emory Cobb	Board expense	12 00
464	" 6	A. Herbert	Digging well	23 50
465	" 6	E. A. Robinson	Work in shop	34 50
466	" 6	J. C. Craver	Work in orchards	14 85
467	" 6	M. B. Burwash	" "	12 15
468	" 6	J. Blakesley	" "	19 18
469	" 6	T. Franks	Salary, September	75 00
470	" 8	J. Wilkinson	Teaming	13 50
471	" 8	Avey & Neff	Blacksmithing	7 16
472	" 8	R. Peacock	Lumber on account	300 00
473	" 8	E. Snyder	Salary, September	150 00
474	" 11	J. Bellangee	Petty expenses	9 00
475	" 11	W. M. Baker	Books for library	14 00
476	" 11	Angle & Sabine	Implements and tile	67 82
477	" 12	J. W. Bunn	Payment for chemical apparatus	639 70
478	" 12	" "	Taxes on lands	1,468 89
479	" 12	G. E. Hessel	Harness and beltings	80 50
480	" 12	Nash & Fleming	Sand and gravel	244 25
481	" 13	A. Jewell	Timothy seed	54 12
482	" 13	Illinois Central R. R. Co.	Back freights	32 90
483	" 13	J. E. Cantrell	Work in shop	50 00
484	" 13	Dickinson & Collier	Carpenter work	500 00
485	" 15	J. M. Gregory	Salary, October	333 33
486	" 15	H. E. Robbins	Expense to State Fair	11 15
487	" 15	D. Owens	Mason work on barn	42 80

Statement—Continued.

No.	Date.	To whom.	For what.	Amount.
488	Oct. 15	A. L. Rader	Work on building	$117 75
489	" 18	D. M Ford	Fire brick and castings	23 75
490	" 18	Larrabee & North	One sheet of brass	7 65
491	" 18	E. V. Peterson	Books	103 81
492	" 18	" "	20,000 brick	180 00
493	" 24	J. Wilkinson	Work on orchards	8 25
494	" 24	Heislar & Coler	One manure fork	1 50
495	" 24	H. Peddicord	Lime and cement	24 25
496	" 24	Palmer, Fuller & Co	Doors and sash	56 75
497	" 24	Walker Bro's	Mouldings	135 48
498	" 24	Beidler & Kratz	Lumber and lime	219 31
499	" 24	O. W. Hammond	Carpenter work	21 00
500	" 24	J. McKinzie	Sand	28 80
501	" 31	W. M. Baker	Salary, October	166 66
502	" 31	A. P. S. Stuart	" "	166 66
503	" 31	S. W. Robinson	" "	166 66
504	" 31	T. J. Burrill	" "	150 00
505	" 31	S. W. Shattuck	" "	150 00
506	" 31	E. Snyder	" "	150 00
507	" 31	J. Bellangee	" "	83 33
508	" 31	H. M. Douglass	" "	83 33
509	" 31	H. J. Detmers	" "	100 00
510	" 31	R. B. Warder	" "	50 00
511	" 31	I. D. Foulon	" "	50 00
512	" 31	Pat. Lamb	Wages, October	25 00
513	" 31	J. S. Searfoss	Salary, October	83 33
514	" 31	A. Thomson	" "	83 33
515	" 31	H. K. Vickroy	" "	83 33
516	" 31	T. Franks	" "	75 00
517	" 31	G. S. Upstone	" "	60 00
518	" 31	Dickerson & Collier	Carpenter work	127 67
519	" 31	Wilson Dowell	Painting	25 00
520	" 31	R. Peacock	Lumber	345 97
521	Nov. 1	G. S. Upstone	Farm labor, etc	245 53
522	" 3	Fuller, Finch & Fuller	Glass and paint	93 71
523	" 3	A. S. Barnes & Co.	Freight and duties	63 18
524	" 3	Peterson & Turnell	3,625 brick	32 63
525	" 3	James Vick	Bulbs and seeds	17 87
526	" 3	W. H. Wisegarner	Threshing	17 55
527	" 3	S. Dunlap	Work on orchard	16 65
528	" 3	E. Snyder	Payment of students	557 61
529	" 3	D. M. Ford	Boiler and pipes	126 04
530	" 3	J. Pancake	1,185 feet maple	35 53
531	" 3	J. Blakesley	One month's work	19 40
532	" 5	E. V. Peterson	Books	87 96
533	" 5	Dickerson & Collier	Carpenter work	500 00
534	" 5	Becker & Son	Chemical apparatus	129 46
535	" 7	J. T. Wier	Plastering	100 00
536	" 7	Union Coal Company	Three cars coal	51 00
537	" 9	D. Owens	Mason work	56 93
538	" 9	M C. Goltra	Board expense	10 00
539	" 9	P. R. Wright	" "	26 65
540	" 9	J. H. Pickrell	" "	6 80
541	" 9	L. W. Lawrence	" "	34 00
542	" 9	A. M. Brown	" "	29 40
543	" 12	Union Coal Company	Twenty tons coal	37 00
544	" 12	H. Swanell	Paints and glass	63 11
545	" 12	Angle & Sabine	Draining tile	52 85
546	" 12	Walworth, Twohig & Furse	Iron pipes	146 04
547	" 12	Earth Closet Company	One ash commode	25 00
548	" 12	A. J. Bicknell	Books	67 50

Statement—Continued.

No.	Date.		To whom.	For what.	Amount.
549	Nov.	12	W. Parritt	Gas fixtures	$22 00
550	"	12	W. Sim & Bro	Paints	72 75
551	"	12	J. McKinzie	Sand	12 75
552	"	12	A. P. S. Stuart	Expense for laboratory	33 28
553	"	14	W. C. Flagg	Salary Corresponding Secretary	200 00
554	"	14	Republic Insurance Co	Insurance	75 00
555	"	14	J. M Gregory	Incidental expense	34 15
556	"	14	W. Dowell	Painting	50 00
557	"	14	E. Snyder	Petty expense	38 65
558	"	14	T. J. Burrill	Taxidermist's work	8 50
559	"	14	T. S. Hubbard	Two kegs nails	10 00
560	"	21	Patrick Lamb	Wages to date	28 00
561	"	21	J. T. Wier	Plastering	37 50
562	"	21	D. Owens	Mason work	26 17
563	"	21	G. Eli	Blacksmithing	13 40
564	"	21	State Journal Company	Printing catalogues	700 00
565	"	21	C. G Larned	Hardware	363 45
566	"	23	J. M. Gregory	Salary, November	333 33
567	"	23	George Eli	Four iron rods	49 40
568	"	23	Chaddon & Hesse	Windows, transoms	33 00
569	"	23	Edgar Sanders	Bulbs	6 00
570	"	25	Storrs, Harrison & Co	Assorted grape vines	53 25
571	"	25	Fuller, Finch & Fuller	Glass	39 05
572	"	25	J. W. Searfoss	Work on orchards	30 00
573	"	26	S. A. Harvey	Walnut lumber	25 00
574	"	29	Wm. M. Baker	Salary, November	166 66
575	"	30	A. P. S. Stuart	" "	166 66
576	"	30	S. W. Robinson	" "	166 66
577	"	30	H. Roughton	Iron pipes	36 00
578	"	30	S. W. Shattuck	Salary, November	150 00
579	"	30	T. J. Burrill	" "	150 00
580	"	30	E. Snyder	" "	150 00
581	"	30	J. Bellangee	" "	83 33
582	"	30	H. M. Douglass	" "	83 33
583	"	30	H. J. Detmers	" "	100 00
584	"	30	R. B. Warder	" "	50 00
585	"	30	A. Thomson	" "	83 33
586	"	30	I. D. Foulon	" "	50 00
587	"	30	J. S. Searfoss	" "	83 33
588	"	30	H. K. Vickroy	" "	83 33
589	"	30	Thos. Franks	" "	75 00
590	"	30	G. S. Upstone	" "	60 00
591	"	30	" "	Pay and board of hands	163 07
592	Dec.	1	David Dunlap	Work on orchard	30 00
593	"	1	H. M. Clark	Drain tile	59 50
594	"	1	S. A. Harvey	Lumber	64 15
595	"	5	J. T. Wier	Plastering	40 00
596	"	6	Peabody, Ayres & Dean	Iron pipes	339 54
597	"	7	S. W. Robinson	Expenses Mechanical department	20 20
598	"	8	M. L. Dunlap	Expenses to meeting	4 50
599	"	8	" "	Making cider and 3 casks	24 00
600	"	8	E. Snyder	Students labor	618 74
601	"	9	Peabody, Ayres & Dean	Iron pipes	10 35
602	"	10	D. Butterworth	Taxidermic work	50 30
603	"	10	A. S Barnes & Co	Freight and duties	21 55
604	"	12	M. C. Goltra	Expense to meeting	8 50
605	"	12	J. H. Pickrell	" "	6 45
606	"	12	P. R. Wright	" "	21 00
607	"	12	A. M. Brown	" "	26 40
608	"	13	E. Snyder	Petty expense	45 05
609	"	13	Palmer, Fuller & Co	Sash and windows	36 59

Statement—Continued.

No.	Date.		To whom.	For what.	Amount.
610	Dec.	13	Union Coal Company....	Four cars coal	380 00
611	"	13	Wm. Price	Painting	210 57
612	"	13	L. Kaufmann	Pear and apple stock.........	80 00
613	"	13	Webster, Davies & Co ..	Cement and lime	169 75
614	"	13	Trevitt & Green........	Hardware	281 50
615	"	13	John Fisher	Flower pots	16 22
616	"	13	L. W. Lawrence........	Board expense	23 50
617	"	13	J. M. Gregory	Purchase of cattle................	2,306 14
618	"	14	A. Jewell.............	Expense in buying cattle	15 00
619	"	15	W. Dowell.............	Painting	34 43
620	"	15	W. J. Foote............	700 brick	7 00
621	"	21	J. M. Gregory...........	Salary, December.........	333 33
622	"	21	W. M. Baker..........	" "	166 66
623	"	21	A. P. S. Stuart.........	" "	166 66
624	"	21	S. W. Robinson	" "	166 66
625	"	21	T J. Burrill	" "	150 00
626	"	21	S. W Shattuck.........	" "	150 00
627	"	21	E. Snyder	" "	150 00
628	"	21	J. Bellangee	" "	93 33
629	"	21	H. M. Douglass	" "	83 33
630	"	21	I. D. Foulon	" "	50 00
631	"	21	R. B. Warder	" "	50 00
632	"	21	H. J. Detmers	" "	100 00
633	"	21	J. S. Searfoss	" "	83 33
634	"	21	A. Thomson	" "	83 33
635	"	21	H. K. Vickroy	" "	83 33
636	"	21	Thos. Franks..........	" "	75 00
637	"	21	Dickerson & Collier.....	Carpenter work	668 20
638	"	27	Liverpool Globe Ins. Co..	Insurance..........................	262 50
639	"	31	J. M. Gregory	20 head of cattle	1,243 86
	1871				
640	Jan.	1	G. S. Upstone..........	Farm expense.....................	84 30
641	"	3	J. O. Smith	Oak lumber	60 40
642	"	4	Frank M. Snyder.......	Printing labels	5 25
643	"	5	Flynn & Scroggs	" "	29 35
644	"	6	Illinois Central R. R. Co.	Back freights, &c	51 77
645	"	6	E. A. Robinson	Work in shop	41 60
646	"	6	J. T. Wier.............	Work in orchards	27 12
647	"	6	H. T. Williams	Books	60 00
648	"	6	W. Dowell	Painting	15 00
649	"	7	Gaslight Company......	One quarter's gas.................	64 30
650	"	7	E. Snyder	Students' labor	328 25
651	"	9	Avey & Neff...........	Blacksmithing	8 25
652	"	10	G. S. Upstone..........	Salary, December.	60 00
653	"	10	N. C. Ricker...........	Carpenter work	60 65
654	"	10	J Bishop	Platina tube	47 77
655	"	12	Professor J. B. Turner ..	Expense to lecture...............	13 00
656	"	12	Parker Earle	" "	6 00
657	"	12	David M. Ford	Castings	11 25
658	"	12	Larrabee & North.......	Brass and wire....................	14 89
659	"	12	Dodson & Hodges.......	Hardware	146 19
660	"	12	Flynn & Scroggs	Binding books....................	119 50
661	"	12	S. S. Bignall...........	Force pumps	20 66
662	"	16	C. G. Larned...........	Hardware	260 25
663	"	19	M. C. Goltra...........	Board of expense.................	10 00
664	"	19	A. M. Brown..........	" "	25 40
665	"	19	J. H. Pickrell..........	" "	4 20
666	"	19	L. W. Lawrence........	" "	36 30
667	"	19	P. R. Wright	" "	24 00
668	"	20	L. A. Parks & Co	Printing for lectures	33 23
669	"	20	Union Coal Company ...	Four cars coal	80 00

Statement—Continued.

No.	Date.	To whom.	For what.	Amount.
670	Jan. 20	Walker Bros	Mouldings	$36 90
671	" 20	Chaddon & Hesse	Sash and doors	10 50
672	" 20	Fuller, Finch & Fuller	Paint and glass	98 14
673	" 20	J. J. Clark	12 hogs	121 20
674	" 20	L. C. Garwood	Keys and waste basket	6 55
675	" 20	George Eli	Blacksmithing	17 35
676	" 20	J. M. Gregory	Sundry expenses	25 45
677	" 20	A. P. S. Stuart	" "	17 24
678	" 20	E. Snyder	" "	7 52
679	" 20	O. D. Wellmann	Farm work	11 54
680	" 20	J. S. Searfoss	Pay of hands at barn	11 28
981	" 20	Dr. E. S. Hull	Lecture	250 00
682	" 20	B. J. Jillson	Lecture expense	28 00
683	" 21	B. J. Jillson	" "	2 00
684	" 21	Wm. Kennedy	Gravel	4 80
685	" 21	J. A. Henderson	Gutters, gardener's barn	17 00
686	" 30	S. E. Lane	Plastering	4 50
687	" 31	J. F. Luhme & Co	Chemicals and apparatus	321 01
688	" 31	A. H. Andrews & Co	50 gross crayons	11 50
689	" 31	J. M. Gregory	Salary, January	333 33
690	" 31	W. M. Baker	" "	166 66
691	" 31	A. P. S. Stuart	" "	166 66
692	" 31	S. W. Robinson	" "	166 66
693	" 31	T. J. Burrill	" "	150 00
694	" 31	S. W. Shattuck	" "	150 00
695	" 31	E. Snyder	" "	150 00
666	" 31	J. Bellangee	" "	83 33
697	" 31	H. M Douglass	" "	83 33
698	" 31	H. J. Detmers	" "	100 00
699	" 31	R. B. Warder	" "	50 00
700	" 31	I. D. Foulon	" "	50 00
701	" 31	A. Thomson	" "	83 33
702	" 31	H. K. Vickroy	" "	83 33
703	" 31	T. Franks	" "	75 00
704	" 31	J. H. Searfoss	" "	55 56
705	" 31	E. V. Peterson	Wall paper, etc	37 70
706	Feb. 1	G. M. Rice	Farm expense	39 45
707	" 2	N. O. Albert	Work in orchard	16 12
708	" 2	J. T. Wier	" "	27 85
09	" 2	A. Herbert	Digging well	24 00
10	" 2	G. S. Upstone	Board of hands, etc	40 47
11	" 2	G. S. Upstone	Salary, January	60 00
12	" 2	M. Miles	Course of lectures	175 00
13	" 6	Gaslight Company	Gas for January	23 60
14	" 6	M. C. Goltra	Expenses locating land	37 40
15	" 9	L. W. Lawrence	Expenses to meeting	25 10
16	" 9	J. H. Pickrell	" "	10 65
7	" 9	M. C. Goltra	" "	12 00
8	" 9	M. Miles	Course of lectures	451 10
9	" 9	E. Snyder	Students labor	332 31
0	" 15	N. O. Albert	Four hogs	28 00
1	" 15	P. Lochrie	Advertising sales	8 00
2	" 15	Johnson Bogardus	Hay press	151 00
	" 28	J. M. Gregory	Salary, February	333 37
	" 28	W. M. Baker	" "	166 74
	" 28	A. P. S. Stuart	" "	166 74
	" 28	S. W. Robinson	" "	166 74
	" 28	T. J. Burrill	" "	150 00
	" 28	S. W. Shattuck	" "	150 00
	" 28	E. Snyder	" "	150 00
	" 28	J. Bellangee	" "	83 37

Statement—Continued.

No.	Date.	To whom.	For what.	Amount.
731	Feb. 28	H. M. Douglass	Salary, February	$83 37
732	" 28	H. J. Detmers	" "	100 00
733	" 28	R. B. Warder	" "	50 00
734	" 28	I. D. Foulon	" "	58 00
735	" 28	A. Thomson	" "	83 37
736	" 28	H. K. Vickroy	" "	83 37
737	" 28	T. Franks	" "	75 00
738	" 28	G. M. Rice	Farm expense	100 88
739	" 28	M. Hollister	One hog	11 70
740	" 28	J. Fisher	Flower pots	30 17
741	" 28	Parks & Herbert	Baling hay	42 00
742	" 28	N. O. Albert	Work in orchard	30 00
743	" 28	Union Coal Company	60 tons of coal	106 00
744	" 28	J. M. Gregory	Petty expense	44 87
745	" 28	E. Snyder	Students' labor	316 19
746	" 28	Ill. Central R. R. donation	Freights for the year	4,605 78
			Total	$78,983 08

The amount paid for students' labor during the year is $3,499 82—divided among the departments as follows:

Farm account	346 37
Horticultural Department	1,419 53
Mechanical Department	611 23
Library and apparatus	91 26
Building and repairs	74 18
Carpenter shop	609 61
Chemical laboratory	3 40
Steam heating apparatus	118 93
Sundry work	280 73

(Signed,) E. SNYDER.

The report was approved, and referred to the Finance Committee.

Prof. Burrill then read the following

REPORT OF THE HORTICULTURAL DEPARTMENT.

To the Regent of the Industrial University:

During the past year Mr. H. K. Vickroy has remained in charge of the orchards and tree plantations, and has now assumed the charge of the vegetable garden in addition. Mr. Thomas Franks has retained the position of gardener, having in charge the ornamental grounds and green-house. He also had the care of the vegetable garden during the summer. These men have been faithful in the discharge of their duties, and merit the credit due to the practical work of the department. Their further continuance in the respective positions now held by them is hereby recommended. Two men were employed, during the working season, as teamsters, and occasionally a third was engaged for the same kind of work. One only was retained during the winter. The rest of the labor, which in the aggregate amounted to considerable, has been done by the students, who were arranged in classes and under the direction of a foreman worked about two hours each, every suitable day. Not being otherwise engaged upon Saturdays, many worked all day. The student labor problem is not yet however wholly solved. The organization of regular classes and the gradation of pay according to service rendered, are believed to be steps of progress in the solution, for field labor at least; and with the manifest increasing fidelity and efficiency of the students themselves much hope is entertained of an ultimate favorable result. The labor is popular and often very gladly obtained, a few students paying their entire expenses by their work, and all agreeing as to increased health and vigor of body and mind. But the experiment has proved expensive. More, if not better work could have been obtained by hiring ordinary laborers for the money expended. The distance from the University building, the time lost in various ways, the necessity of hand labor where teams might otherwise be employed, the difficulty always growing out of constant changing of forces and kinds of labor, are some of the obstacles encountered. With more system and better supervision these and other things may possibly be avoided, and student labor be made to pay without cutting down the rate per hour. This has been on an average about ten cents, maximum twelve and a-half.

Upon assuming charge of the department I found one horse team valued at $150 and one mule team valued at $357. An additional team of horses was purchased for $250. One horse from the team first mentioned died of lung fever—the loss $75—the others are now in good condition and worth fully as much as they were a year ago. Two students, Messrs. Ricker and Cantrell, constructed for the department of Horticulture a spring wagon, which proves to be as good as the best—cost $140.

In the main, the season was favorable for our crops and work, though the prolonged drouth of the early summer was very trying upon some crops and the newly planted nursery stock and trees.

THE ORCHARD

Has certainly done well. After the hard freeze of October, 1869, the trees were banked with earth, and though the bark has since been found ruptured in some instances, very few have died. Beginning early in the season the necessary pruning has been done and the heads of trees well shaped. In May and June the trunks were washed with soft soap and water or a solution of sal soda and water, with very evident good results. The latter wash seems best. Vacancies and places previously too wet for planting, have been filled from the nursery. The ground has been plowed toward the trees, and the wet places well ridged up for planting this spring. Corn was planted among the trees and the stalks left standing for winter shelter. The caterpillars of the *Datana ministra*, the Cecropia moth and the Hammond Leaf-tyer, have been quite troublesome, but have been closely watched and nearly subdued.

THE NURSERIES

Are in satisfactory condition. Considering the severe drought of the season, a very small per cent. of the young and newly planted trees have been lost. Those that were heavily mulched did the best. Two thousand White Ash seedlings were not received till May 9th, yet they appear to have grown better than any other trees. Mr. Vickroy considers this tree one of the very best for timber plantations; grows rapidly, valuable for many purposes in 10 to 20 years, and exceedingly valuable in older age.

The following trees were received and put in the nursery for the forest tree plantation:

From Samuel Edwards, Lamoille, Ill.:		
Norway Spruce	14,000	
White Pine	8,000	
White Willow cuttings	8,000	
Black Spruce	2,000	
Hemlock	3,000	
Tulip	3,000	
Red Pine	425	
Black Sugar Maple	10,000	
Basswood	4,000	
		52,425
Robert Douglass & Son, Waukegan, Ill.:		
American Arbor-Vitæ	250	
Red Cedar, (nearly all dead,)	50	
		300
W. A. Nourse, Moline, Ill.:		
White Ash	20,000	
Sugar Maple, (white)	10,000	
White Elms	6,000	
		36,000
Ellwanger & Barry, Rochester, N. Y.:		
Mahaleb Cherry	100	
Auger's Quince	100	
Pear Stocks	100	
		300

From D. B. Wier, Lacon, Ill.:		
Silver Maples	7,300	
White Ash	600	
		7,900
From Storrs & Harrison, Painesville, Ohio:		
American Chestnut		6,000
Boatman & Co., Champaign, Ill.:		
Osage Orange		4,000
Catalpa—(grown from seed, presented by Hon. W. C. Flagg)		8,000
Total		177,725
Arthur Bryant, Jr., Princeton, Ill.:		
3 bbls. Black Walnuts, (seed).		
2 " White " "		

The total number of trees for forest plantation received, and the seedlings of our own growth, will more than balance the number that have died.

During the winter there have been grafted about 400 varieties of pears, averaging about five grafts each, and about 1,500 pears of standard varieties, also about 10,000 apples of standard varieties. The latter were secured mainly for practice by the students.

SHELTER BELTS.

Received from M. L. Dunlap & Sons, Champaign, Ill., 141 Norway Spruce, for west side of apple orchard.

From F. K. Phœnix, Bloomington, Ill., 170 white pine, for south side of horticultural grounds.

The former have done well, the latter not. Trees were ordered from Albany, N. Y., to set in the vacant tenth rows of the apple orchard, but after considerable delay word was obtained that those of proper size could not be furnished. They were to be Norway Spruce, 2 to 3 feet, and were advertised at $20 per 1,000.

STREET TREES.

From F. K. Phœnix, Bloomington, Ill., 130 white elms. These were set 50 feet apart, 8 feet from hedge, throughout the west side of the Horticulthral grounds, and silver maples planted between, the latter to be finally removed.

SMALL FRUITS.

The only variety of fruit obtained was the Wilson Strawberry, of which we had a fair crop from about half an acre. The plan is to establish if possible a few of a number of varieties of small fruits for experiment, comparison, etc., and then plant on a larger scale a few standard varieties for profit, and by keeping careful accounts, to determine the actual amount realized. For these there have been purchased as follows:

From Purdy & Hance, South Bend, Ind., 11 varieties of grapes, 4 of currants, 14 of raspberries, and 15 of strawberries.

From Elwanger & Barry, Rochester, N. Y., 10 varieties of grapes, 3 of currants, 2 of gooseberries, 4 of raspberries, and 4 of strawberries.

From Storrs, Harrison & Co., Painesville, Ohio, 600 Concord grape vines, 200 Creviling, 100 Delaware, 100 Ives, 50 Clinton, and 50 Catawba, all 1 year old.

VEGETABLE GARDEN.

Crops fair to good, some excellent. The number of varieties of vegetables was great, many of them planted for the purpose of testing the qualities of each, so that considerable information was gained in this particular for future benefit. Financially the experiment was not successful, and probably never can be, excepting with a few crops. For the coming year it is thought best to keep up the large number of varieties, but upon a very small scale, and plant largely of the few paying crops.

Corn—best varieties, from many varieties grown—1, Early Narragansett; planted April 29th; first sold July 15th; 2, Crosby's Early; 3, Stowell's Evergreen.

Cucumbers, best—long green; three varieties planted.

Cabbage—best early varieties; eight varieties grown—1, Early Jersey Wakefield; 2, Early Ox Heart. Best late varieties—1, Marblehead Mammoth; 2, Red Drumhead, (for pickling.)

Carrots—four varieties—Early Scarlet Horn and Early Short Horn, nearly alike, good, early; Improved Orange and Long Orange, similar, good, winter.

Cauliflower—four varities grown—best, Extra Early Dwarf Erfurt. None headed well.

Lettuce—three varieties grown—Early Curled Silesia, best early; Drumhead, best summer.

Musk Melons—five varieties grown—White Japan, earliest, good; Alton Nutmeg, large, very good; Christina, medium early, good.

Water Melons—five varieties grown—Mountain Sweet, best; Joe Johnson, next best.

Egg Plant—New York Improved and Black Pekin; both good, but no market for them.

Parsnips—four varieties grown—Sutton's Student, best. The Turnip Rooted seeded.

Peas—six early varieties grown—Caractus, earliest and best; Early Kent and McLean's Little Gem, second best.

Squash—five varieties grown—Bush Scallop, best early; American Turban, best, late.

Tomatoes—six varieties grown—Alger, Early York and Keyes, all early and good; Gen. Grant, Fegee and Lester's Perfected, all good late varieties.

Many other less important vegetables were grown, with fair success.

A good barn was erected near the gardener's house. Some of the vegetables in the cellar were frozen during the severe weather of December, the thermometer showing 30 degrees below zero on the morning of the 24th.

About acres of the land devoted to the vegetable garden has been underdrained this year, the labor being done by the students. The drains are three to four feet deep, forty feet apart, and run directly down the slope when practical. No collars, nor substitutes for collars, were used with the tile, and upon examination this spring all the drains are found to be in good working order. The good effect is now easily perceived upon the surface..

GREEN HOUSE AND ORNAMENTAL GROUNDS.

In the latter part of summer the grounds in front of the University were all ablaze with showy plants and flowers, tastefully arranged. The trees have done well, and with the addition of others of different varieties, will ultimately make a fine show. The borers have nearly destroyed the silver maples, planted as street trees. About fifty loads of gravel were added to the walks and roads.

The green house has been completed, and pretty well filled with plants. These are largely bedding plants, taken mostly from the grounds last fall. A large number have been propagated from this original stock. Twenty dollars' worth of new varieties were recently purchased from F. K. Phœnix. A collection from the Michigan Agricultural College have just been received, and others are promised. For these we are to send some that we have. Mr. Henry Shaw, of the Botanical Gardens of St. Louis, consented to send a good collection, but owing to adverse circumstances they have not been received. There are now quite a large lot of choice plants in the green house for sale, from which it is hoped to realize enough to pay a large part of the expenses of this division of our horticultural work. Many citizens express themselves gratified with this opportunity of securing plants, and no doubt is entertained of the chance to sell.

DONATIONS.

Charles Downing, Newburgh, N. Y., about 400 varieties of pear scions.

John Deere, Moline, Ill., subsoil plow.

Hovey & Co., Chicago, Ill., lawn mower.

W. C. Flagg, Moro, Ill., apple trees of 41 varieties, fruited by him near Alton, Ill.

M. L. Dunlap & Sons, 2 standard apple trees, and 1 Early Richmond cherry, on its own roots.

Princeton Manufacturing Company, one corn stalk cutter.

Dr. Humphrey, Galesburg, Ill., collection of many varities of apples (fruit).

R. Taylor, Urbana, Ill., 300 currant cuttings.

Mrs. S. T. Chase, Urbana, Ill., 200 gooseberry cuttings.

Respectfully submitted.

T. J. BURRILL.

The Regent read the following—

REPORT FROM THE MECHANICAL DEPARTMENT,

Of the practical work of that Department, from its opening in January, 1870, *to March* 1*st*, 1871.

This statement does not include the work of the carpenter shop, which was already in operation, under the care of Mr. J. S. Searfoss when the Mechanical Department was organized for regular instruction. Shop room was provided by adding a second story to the carpenter shop.

It having been deemed advisable to fit up the machine shop as far as practicable by the labor of the Department itself, the main part of its work for several weeks was employed in the manufacture of a steam engine and other working machinery. Mr. Alexander Thompson was was appointed as Practical Machinist and Foreman, and his time has been devoted chiefly to the work of practical instruction, except when employed in teaching the class in Railroad Engineering.

The following statement will show the expense of fitting up the shops, including tools purchased, materials and cost of labor:

Boiler, pipe and boiler pumps	$390 [illegible]
Engine as first started	264 [illegible]
Governor and automatic cut off, since put on	61 [illegible]
Machinists' lathe and chuck	235 [illegible]
Shafting, vises, drills, bellows and anvil	74 46
Saws, chisels, etc., etc., to May 1st	195 83

Students' labor	$243 08
Lumber for benches and engine bed	12 56
Grindstone and heater	12 90
Iron work for lathes and saws	100 00
Cost of well	50 00
Piping, belting, etc	23 96
Total cost	$1,637 22

The present estimated value of shop, machinery and appliances which have been added, amounts to $2,480 26.

The estimated value of the materials, models, and unfinished work in shop, the last comprising two thermometer graduation machines, a chronograph, a lawn mower, and several other machines, amounts to $440.

After fitting up the shop, the labor of the department was directed chiefly to the manufacture of models and apparatus for the University itself, and in some cases for other parties. It also gave considerable aid to other departments, making and repairing tools and machinery for the gardens and farms, putting up steam heating apparatus for main building, and making and putting up hot water heating apparatus in the green house.

The apparatus and models made for the University cabinet amount to $425 16. Besides this work, the shop has credits upon various bills for different persons and departments amounting to $899 38. The total credits are $3,644 80.

The total amount paid for machinery and materials of all kinds, up to March 1st, 1871, is $2,364 62.

Amount appropriated to department	$2,400 00
Credit over and above cost	1,280 18
Appropriation minus profits	$1,119 82

(Signed,) S. W. ROBINSON.

Mr. Pearson, as chairman of the Committee on Nominations, reported back as follows:

Your special Committee on the nomination of Standing Committees would respectfully report the following Committees:

Executive.—Regent, J. H. Pickrell, A. M. Brown, E. Cobb, Goltra, Lawrence, Griggs, Pearson, Cunningham.

Agricultural.—Pickrell, Blackburn, Brown of Sangamon, Harrington and Scott.

Horticultural.—A. M. Brown, Pullen, Galusha, Wright and Edwards.

Finance.—Cobb, Hayes, Griggs, Bowen and Scroggs.

Buildings and Grounds.—Goltra, Van Osdel, Cunningham, Greenleaf and Scott.

Auditing.—Lawrence, Wright, Blackburn, Galusha and Mahan.

By-Laws.—Mahan, Pickard and Anderson.

Faculty and Course of Study.—Regent, Bateman, Pickard, Hayes, Slade and Edwards.

Military.—Brayman, Anderson, Scroggs, Wright and Brown of Sangamon.

Library Cabinet.—Bateman, Slade, Griggs, Pullen and Van Osdel.

Mechanical.—Pearson, Greenleaf, Bowen, Harrington and Goltra.

(Signed,) JNO. M. PEARSON,
L. W. LAWRENCE.
J. O. CUNNINGHAM.

The report was accepted and adopted.

The Regent then made a statement of the present prospects of appropriations from the State, and the purposes for which they were designed and given.

On motion, the Board adjourned to meet to-morrow, March 15th, at 9 o'clock A. M.

SECOND DAY'S SESSION—MARCH 15, 1871.

The Board assembled pursuant to adjournment.

Dr. J. M. Gregory read the scriptures, and offered prayer.

The roll was then called.

Present—Messrs. Blackburn, Brown of Pulaski, Brown of Sangamon, Cobb, Cunningham, Edwards, Galusha, Goltra, Griggs, Lawrence, Mahan, Pearson, Pickard, Pickrell, Pullen, Slade, Scroggs, Scott, Van Osdel and the Regent—20.

Absent—Messrs. Anderson, Bateman, Brayman, Greenleaf, Harrington, Hayes, Wright, Johnson, the Governor—9.

On motion of Mr. Brown of Sangamon, the Board took a recess until 1:30 P. M., to inspect the farms and orchards, and give Committees time to meet and report.

AFTERNOON SESSION.

The Board reassembled at 2:15 P. M., the Regent in the chair.

The report of the Veterinary Surgeon, Dr. J. H. Detmers, was then read:

REPORT OF VETERINARY SURGEON.

The Veterinary Infirmary of the Illinois Industrial University opened January 9, 1871, with four patients, and since that time up to the present date, March 11, ten patients—eight horses, one mule, and one steer—have received feed and treatment in the stable, of which, three horses are yet in treatment. Forty-five other patients, among them one cow, have been brought to the clinic, and have been examined by the students; their diseases and ailments have been discussed and diagnosticated, medicines, where deemed necessary, have been prescribed, several operations have been performed and advice given, so that in all, *fifty five* animals have been examined and treated. These fifty-five patients have been also used more or less for illustrating the lectures on exterior, and in all the discussions especial attention has been paid to the predisposing as well as the exciting causes of the different ailments and diseases, and the means by which the same might have been prevented.

Respecting the treatment, preference has always been given to the most simple rational and effective methods. Complicated and hypothetic treatments have been avoided as much as possible.

The ten patients, treated and kept in the infirmary stable, have received, during the sixty-two days of the existence of the Infirmary, two hundred and twenty-one days feed, which shows an average per diem of three to four patients. The lowest number of patients has been two, and the greatest number five, which is all that can be accommodated.

One steer, suffering with cancer in the superior maxillary bone, has been donated to the University by Mr. Phinney, and has been killed for anatomical purposes.

Deaths have not occurred; but five of the patients have been pronounced incurable, among them the above mentioned steer.

One horse has been presented for examination on account of his behavior like a stallion, and he has been found to be a ridgling.

LIST OF DISEASES.

No.	Diseases.	No. cases	Remarks.
1	Anaemia (general)	1	A cow—better
2	Bronchitis (chronic)	1	Recovered
3	Cancer in superior maxillary	1	The above steer
4	Caries in the nasal cavaties	1	Incurable
5	Catarrh (chronic)	2	Recovered
6	Catarrhalic inflammation of the eye	1	Better
7	Colic	1	Recovered
8	Collar galls	2	Improving
9	Contraction of the flexors of the foot	1	Can be cured only by operation
10	Corrosion of the skin on shoulders	1	Improving
11	Curb	1	Improving
12	Elephantiasis	1	Incurable
13	Cyste in false nostrils	1	Must be extirpated
14	Exostosis on superior maxill-bone	1	Better
15	Fibroid (on lower jaw of a steer)	1	Probably cured
16	Fustula on the withers	6	Cured or better
17	Hoofbound	2	Improving
18	Hoof, part of it torn away by accident	1	Much improving
19	Inflammation of the bag	1	Well
20	Lameness in the flexors of the hoof	2	Cured
21	Periodical ophthalmia	5	Temporarily cured
22	Poll-evil	2	1 cured, 1 improving
23	Polyp in the nose	1	Incurable
24	Rheumatism	2	Recovered
25	Ringbone	1	In treatment
26	Spavin	5	2 improving, 1 not heard from, 2 incurable
27	Strangury	1	Better
28	Stringhalt	1	Well
29	Swelled crest	1	Not known
30	Swelled legs	2	Better
31	Thrush	1	Cured
32	Windgalls	1	Not heard from
33	Worms	2	Recovered

Besides the above named patients brought to the clinic several of my private patients have been visited and examined by the students, and one heifer, belonging to Mr. Oscar Dunlap, at Savoy, has been spayed in the presence of some of the veterinary class.

The whole number of prescriptions written in the clinic, is fifty-five.

(Signed) DR. J. H. DETMERS.

On motion of Mr. Goltra, the Finance Committee were instructed to secure a bond from the Treasurer.

The following resolution of A. M. Brown was adopted as amended:

Resolved, That the general plans for a new University building and the Mechanical Ha presented at the present session, be approved, and that the Regent be requested to have the said plans revised by a competent architect; and that he also cause careful estimates to be made of the cost of the erection of the buildings, to be submitted to an adjourned session of this meeting to be held on the 12th day of April, 1871, at 3:00 P. M.

Mr. Cunningham offered the following amendment, which was accepted: That the motto, "Learning and Labor," be engraved in relief upon the frize of the portico, as represented in the plans presented by Mr. Van Osdel.

Dr. J. W. Scroggs, Chairman of the Military Committee, made the following report:

Your Committee on Military Department beg leave to respectfully report that the appropriation of $2,000, made at our last meeting, for a Drill Hall, has been found insufficient for the purpose, and $1,600 of it have been appropriated for a steam-heating apparatus in the building, and $400 have been given to the Mechanical Department.

The appropriation of $25,000 from the state funds, now pending, make it unnecessary to ask for any funds in that direction.

The work of the year has been satisfactorily carried on in this department. There has been exhibition drill before several committees of the Legislature, by the University Battalion, and with much credit to that department of instruction.

There is a military band for the battalion, under instruction, which has already attained considerable proficiency.

For continuation of the instruction and expenses connected, and for the purchase of at least one dozen fencing swords, gauntlets and masks, also the cleaning and occasional repair of the 150 stands of arms, we would ask the sum of $300.

For the instruction already given to the University Band, $60 was appropriated from current funds, but owing to the shortness of these, Capt. E. Snyder applied $30 of a fund of $50 for University buttons, etc., to the purpose, and a small amount is yet due the teacher, Mr. I. W. Colberg, of Urbana.

Some instruments were procured for the band from the city of Champaign, and some of the students have instruments of their own.

We earnestly recommend the appropriation of the amount stated, as it is the minimum that will supply the needs of the department:

Forty weekly lessons for band	$160
Twelve fencing swords, gauntlets, etc	96
Cleaning guns and repairs	44
	$300

(Signed,) J. W. SCROGGS,
D. A. BROWN.

The report was accepted, and so much as refers to appropriations referred to the Finance Committee.

Judge A. M. Brown read the

REPORT OF THE COMMITTEE ON HORTICULTURE.

For what has been done in this department during the past year, the committee refer to the Regent's report, and to the statement presented by the Professor of Horticulture. The work for the coming year will consist of the care of the orchard, nursery, garden and ornamental grounds, and the commencement of the forest tree plantations. Your committee recommend some change in the plan adopted by the Board at their meeting held in November, 1868. It is found that a part of the ground designated by that plan for the forest tree plantations will be needed for the experimental farm, and they propose that twenty acres on the east end of the ground, known as the experimental farm, be devoted to the forest, and that the amount of each variety to be planted be suitably reduced, so that the whole will not occupy more than the said twenty acres, leaving the question of extending the planting in another locality for future determination.

As many of the young forest trees now in nursery are of suitable size for transplanting, your committee recommend that as much of this work be done the present spring as the means at command will allow. They recommend that the arrangement of the trees in the plantation, be intrusted to the Professor of Horticulture and Mr. Vickroy, the superintendent of that department—planting with reference to the adaptation of varieties to the different kinds of soil, and not confining the several varieties arbitrarily to squares or rows. They recommend that the cucumber tree be omitted from the plantation, and that not exceeding one-fourth of an acre each be planted of the black sugar maple, silver-leaf maple and catalpa.

Your committee hereby express their approval of what has been done in the collection of different varieties of fruits, both for the orchards and the gardens, and recommend that this be extended as new varieties of promise are brought out. They also approve the recommendations of the Regent and Professor of Horticulture with reference to the vegetable garden.

They also recommend the collection, as rapidly as it can be done without too great expense, of trees and shrubs for the arboretum, which should include, ultimately, every variety of tree and shrub that will flourish in this soil and climate, and especially all kinds that are native to our own State. These trees and shrubs, as collected, may be planted in nursery until the ground intended for their permanent planting can be put in a proper state of preparation.

The committee ask that the remainder of the legislative appropriation to the credit of this department, be appropriated for carrying on the above indicated work, and that further appropriations may be made as they may be needed, by the Executive Committee.

[Signed] A. M. BROWN,
B. PULLEN,
S. EDWARDS,
JNO. M. PEARSON,
O. B. GALUSHA.

Judge Cunningham moved that so much of the report as refers to change of location in forest plantations, be omitted.

The ayes and noes being called for, the vote resulted as follows:

Ayes—Brown of Sangamon, Cunningham, Goltra, Griggs, Lawrence, Pickrell and the Regent—7.

Noes—Blackburn, Brown of Pulaski, Edwards, Galusha, Mahan, Pearson, Pickard, Pullen, Slade, Scroggs and Scott—11.

The motion to accept the report and its recommendations, and refer so much of it as regards appropriations to the Finance Committee, was adopted.

The following resolution of Mr. Pearson was adopted:

Resolved, That Article XII, of the By-Laws of the Board, be amended by adding to the list of standing committees, as follows:

"12. Committee on the state of the Institution, of three members, whose duty it shall be, at stated times in each year, to visit the University and examine thoroughly into the method of teaching in the various departments, and upon the progress of the students and the general efficiency of the discipline, and report to the Board at each meeting."

Messrs. Pickard, Slade and Brown of Sangamon, were appointed as Committee on the state of the Institution.

The report of the Committee on Faculty and Course of Study was read by the chairman, Mr. Pickard, and adopted.

REPORT OF COMMITTEE ON FACULTY, ETC.

The Committee on Faculty and Course of Study would recommend hat Professor Shattuck be transferred to the Department of Matheatics, and that Professor Robinson take charge of the Department f Civil Engineering, in addition to his present work; and that in all ther matters the appointment and arrangement of teachers be left to e Executive Committee with the recommendations that the three rofessorships named in the report of the Regent be filled at the comencement of the next year.

Your committee would further recommend that the requirements for admission, suggested by the Regent, be adopted as soon as practicable.

SAMUEL EDWARDS,
J. M. GREGORY,
JAS. P. SLADE,
J. S. PICKARD.

Mr. Cobb, chairman of the Finance Committee, reported. After being read, the report was recommitted, to be reported back at eight o'clock P. M.

Mr. Goltra reported, verbally, for the Committee on Buildings and Grounds. The buildings were in good repair, and grounds looking well—recommended the usual appropriation for current expenses.

The report was accepted.

The chairman of the Auditing Committee, Judge L. W. Lawrence, made the following

REPORT OF THE AUDITING COMMITTEE.

The Auditing Committee beg leave to report that they have examined the Treasurer's Report and find the same to be correct; that they have examined and canceled warrants numbered from 1 to 746 inclusive, and left them in the hands of the Treasurer for safe keeping.

The committee have also examined the following bills; and recommend that warrants be drawn for their payment, viz:

A. J. Bicknell & Co.	$30 63
North American Review	4 00
Horticulturist	2 50
Scientific American	
T. R. Leal	47 80
F. K. Phoenix	52 85
J. McCorkle	114 85
Journal Printing Company	12 00
Larrabee & North	5 00
Doan House	114 00
Avey & Neff	3 90
Angle & Sabin	4 40
Griggs House	21 00
Dickerson & Collier	31 50
Hovey & Co	12 91
G. S. Upstone	35 13
Trevitt & Green	54 30
Henry Swanell	41 88
E. Snyder	117 71

(Signed,) L. W. LAWRENCE,
O. B. GALUSHA,
I. S. MAHAN,
A. BLACKBURN.

The report was adopted.

Mr. Edwards, on his request, was granted leave of absence.

On motion, the Board adjourned to meet again at half-past seven o'clock P. M.

The Board met according to adjournment.

The chairman of the Finance Committee read the following report, which was voted upon in detail, and adopted:

REPORT OF FINANCE COMMITTEE.

Your Committee on Finance beg leave to report as follows:

It will be remembered that at our last annual meeting, we were instructed, with the Treasurer, to enforce the provisions of a contract then existing with G. F. Lewis, for the sale of 50,080 acres of land scrip at 89½ cents per acre. After considerable correspondence in regard to the matter we received payment as per contract. The committee appointed to locate the balance of our land scrip, report that they have been unable to find suitable locations as yet, but they are of the opinion that there are government lands now being surveyed in Southern Kansas from which we may, during the coming season, be able to make desirable selections. We would recommend that the committee, consisting of Messrs. Goltra and Bunn, be reappointed, and that D. A. Brown, of Sangamon, be added thereto. The amount of scrip to be located is 153 pieces, or 24,480 acres. We also recommend that said committee be requested to keep themselves as well informed as may be in regard to our lands already located, and that when, in their opinion, they can be disposed of at not less than five dollars per acre, that they report the same to the Executive Committee in order that steps may be taken to put them in market, if deemed advisable.

The Treasurer and Chairman of this committee have endeavored, during the past year, to re-invest our six per cent. securities in safe bonds, bearing a larger rate of interest.

We have already arranged and exchanged for $15,000 Champaign county bonds, at 10 per cent. We have delayed investing in bonds issued for railroad purposes, under the act of 1868–9—commonly known as the Railroad Funding Bill—fearing that there might be some question as to their constitutionality, and also that some unfriendly legislation might be made during the present session of our General Assembly. As nothing of the kind has occurred, we now propose to exchange, as soon as possible, for that class of securities where they are issued by our best counties, and their total debt is not excessive. We do not think it wise to invest in town bonds.

During the past year, the Executive Committee, acting upon the order of the full Board at the last annual meeting, contracted or sold 280 acres of the Griggs Farm, at $60 per acre, receiving a small payment down, the balance drawing 8 per cent. interest, payable semi-annually, in advance. We now have a proposition for 40 acres more, which is low and marshy, and not contiguous to a highway, at $55 per acre. The committee recommend the sale, and that Judge J. O. Cunningham be authorized to make all the necessary papers, on the part of this Institution, to consummate this and all other sales that have been made, and deposit said papers with the Treasurer or Regent.

The Bookkeeper's statement, which was referred to this committee, has been examined, and upon comparison with the Treasurer's Report, found to be correct in all essential particulars. Its preparation must have required great care and skill, and we doubt not will be satisfactory to the State Auditor, in the final settlement of our appropriation account for the year 1869–70. We have reason to congratulate ourselves in having in our teaching corps one who is so useful to us in this way.

So much of the Regent's report as was referred to this committee, touching the finances, is in the main concurred in and recommended. The suggestion, however, that the funds for the several departments be kept separate, is, in our opinion, not feasible.

ESTIMATED EXPENDITURES FOR THE NEXT UNIVERSITY YEAR.

Board expenses	$1,200	
Salaries Treasurer and Corresponding Secretary	1,000	
Regent	4,000	
Prof. Baker	2,000	
" Stuart	2,000	
" Robinson	2,000	
" Shattuck	1,800	
" Burrill	1,800	
" Snyder	1,800	
" of Agriculture	2,000	
" Geology and Natural History	1,000	
" History and Social Science	1,000	
Two assistants at $600	12,000	
One assistant	1,000	
Non-resident lecturers	1,000	
Lecturers on Veterinary Science	600	
		$23,200 00
Agricultural department		3,000 00
Horticultural "		1,000 00
Florist, and labor on grounds		900 00
Insurance		400 00
Taxes		2,235 00
Buildings, repairs and care of		1,000 00

Fuel and lights	$1,000 00
Printing, advertising, stationery, etc	1,000 00
Incidentals	2,078 88
Library	1,000 00
Bills not audited	800 00
Safe for Regent and Secretary	100 00
Due on salary account of '69 and '70	800 00
Military department	250 00
Mechanical department	500 00
	$41,268 88

ESTIMATED INCOME:

On bonds	$30,000 00
Interest on land mortgages	1,440 00
Rents	360 00
Farm notes for rents	1,500 00
Matriculation, and other fees	3,500 00
From Agricultural department	3,000 00
Amount in Treasurer's hands	1,626 80
	$41,426 80

The unexpended balance of State appropriations is as follows:

Agricultural department	$686 41
Horticultural "	1,848 12
Chemical "	1,964 05
	$4,498 58

We recommend that the above be appropriated by the Executive Committee to the various departments, from time to time, as needed.

All of which is respectfully submitted,

EMORY COBB,
C. R. GRIGGS.

The report was discussed in detail, and, with slight modifications, adopted.

J. H. Pickrell, chairman of the Committee on Agriculture, made the following

REPORT OF COMMITTEE ON AGRICULTURE.

Your Committee on Agriculture beg leave to report, that after a full examination of the premises, and after a full canvass of the whole matter, they think it is advisable to refer the general management of the farms to the Executive Committee. They approve the arrangement made with E. L. Lawrence, and refer you to the Regent's report for he labor and appropriations of the last year. In relation to Mr.

George Upstone's salary, we find that on the 10th day of December last, Mr. Upstone met with an accident while attending to duties connected with the University, and that his salary has been paid up for January. We recommend that it be paid up to the first of March, and that his house rent be donated to him: *Provided*, that this amount shall be withheld till he may vacate such portions of the dwelling on the stock farm as Mr. E. L. Lawrence may wish to use at once, and full and peaceful possession, as soon as his family can safely be moved. We would further recommend that the bill of Doctors Howard and Martyn, for services rendered Mr. Upstone, be rejected.

J. H. PICKRELL,
JAMES R. SCOTT,
A. BLACKBURN,
D. A. BROWN.

The report was accepted, and the recommendations adopted.

Mr. J. R. Scott moved a reconsideration of the action of the Board on the adoption of the report of the Committee on Horticulture.

Carried.

On motion, the report was recommitted for amendment.

The chairman of the Committee on Horticulture reported back the amended report (see page —,) which was adopted, as amended.

On motion, the Board adjourned to Wednesday, April 12th, 1871.

WEDNESDAY, APRIL 12, 1871.

The Board met at 3 o'clock, P. M., according to adjournment, but no quorum being present, adjourned to meet again on Thursday, April 13th, 1871, at 3 o'clock, P. M. The Recording Secretary was directed to call the absent members of the Board.

THURSDAY, APRIL 13, 1871.

The Board met at 3 o'clock. No quorum present. Adjourned to meet Friday, April 14th, 1871, at 3 o'clock, P. M.

FRIDAY, APRIL 14, 1871.

Board met at 3 o'clock. Adjourned for lack of a quorum, to meet on Saturday, April 15th, at 1 o'clock, P. M.

SATURDAY, APRIL 15, 1871.

The Board met. No quorum present. Adjourned to meet Monday, April 17th, 1871, at 1 o'clock, P. M.

MONDAY, APRIL 17, 1871.

The Board met at 1 o'clock, P. M. There being no quorum present, the meeting adjourned till 9 A. M., Tuesday, April 18th, 1871.

TUESDAY, APRIL 18, 1871.

The Board assembled at the appointed hour, but having no quorum, djourned to Wednesday, April 19th, 1871, at 1 o'clock, P. M.

WEDNESDAY, APRIL 19, 1871.

Board met at 1 o'clock, P. M. No quorum present, adjourned to eet on Thursday, April 20th, 1871, at 3 o'clock, P. M.

THURSDAY, APRIL 20, 1871.

The board met at 3 o'clock, P. M., agreeable to adjournment, in the Regent's office.

The calling of the roll resulted as follows:

Present—Messrs. Blackburn, Bowen, Brown of Pulaski, Cobb, Cunningham, Edwards, Galusha, Goltra, Griggs, Lawrence, Pearson, Pickrell, Pullen, Pickard, Scroggs, Slade, Scott, VanOsdel, Wright and the Regent—20.

Absent—Messrs. Anderson, Bateman, Brayman, Brown of Sangamon, Greenleaf, Harrington, Hays, Johnson, Mahan, McMurray, Wagner and the Governor—12.

Hon. C. R. Griggs invited the members of the Board to be his guests at the Griggs' House. The invitation was accepted; and, on motion, the Board took a recess until 7 o'clock, P. M.

EVENING SESSION.

The Board assembled at 7:30, P. M.

Scriptures were read by the Regent, and prayer offered by Judge L. W. Lawrence.

The oath of office was administered to the newly appointed members of the Board, Judge J. O. Cunningham and Mr. Bowen, by Judge Lawrence.

Judge Lawrence offered the following resolution, which was adopted:

Resolved, That Judge J. O. Cunningham be requested and instructed to examine the question of the liability of the property in the hands of this Board, in trust, for taxes, which are understood to have been levied, and take such action in the premises as to him may seem necessary.

On motion of Mr. Goltra, the Board proceeded to consider the question of the location of the University building to be erected.

To bring the question directly before the Board, Judge Brown offered the following:

Resolved, That the new University building, to be erected with the proceeds of the appropriation recently made by the Legislature, shall be built upon the crest of the ridge on which the gardener's house now stands, being that part of the University lands lying immediately south of Green street.

In the discussion which followed, Messrs. Scroggs, Blackburn and Scott spoke for the erection of the building upon the present grounds, advocating the purchase of about 24 lots east of the present University grounds. Messrs. Griggs, Lawrence, Brown and others, supported the resolution.

The motion was then put to vote, and resulted as follows:

Ayes—Messrs. Bowen, Brown of Pulaski, Cobb, Cunningham, Edwards, Galusha, Goltra Griggs, Slade, Lawrence, Pickrell, Pullen, Pickard and VanOsdel—14.

Noes—Messrs. Blackburn, Wright, Pearson, Scroggs and Scott.

Mr. Pearson rose to explain his vote. He voted "No" because he thought the building under consideration should be located upon the Experimental farm.

Mr. Galusha offered the following resolution, which was adopted:

Resolved, That the location of the Mechanical buildings and Drill Hall, connected with this University, be entrusted to the Executive Committee.

Mr. Cobb moved the following:

Resolved, That, in accordance with the act of appropriation, passed by the General Assembly of the State of Illinois, and approved April ——, appropriating for Chemical, Horticultural and Agricultural departments, and for books and apparatus, an amount of $25,000, the Treasurer be authorized to draw said sums, from time to time, and that the Regent and Recording Secretary be requested to furnish such certificates as he may require.

The ayes and noes being called on Mr. Cobb's resolution, the vote resulted in—

Ayes—Messrs. Blackburn, Bowen, Brown of Pulaski, Cobb, Cunningham, Edwards, Galusha, Goltra, Griggs, Lawrence, Pearson, Pickrell, Pullen, Pickard, Slade, Scroggs, Scott, Van Osdel, Wright and the Regent—20.

Noes—0.

It was moved and carried that the plans and specifications of the new University building, prepared by Mr. Van Osdel, of Chicago, be acted upon by the Board.

Mr. Van Osdel exhibited the plans, and read the estimates, amounting to $143,700.

The plans were adopted by the following vote:

Ayes—Messrs. Blackburn, Bowen, Brown of Pulaski, Cobb, Cunningham, Edwards, Galusha, Goltra, Griggs, Lawrence, Pearson, Pickrell, Pullen, Pickard, Scott, Slade, Van Osdel, Wright and the Regent—19.

Noes—0.

The specifications were referred to the Committee on Buildings and Grounds, with instruction to report at 10 o'clock A. M. to-morrow.

On motion, Mr. Griggs was added to the Building Committee to inspect the plans before it.

The plans and specifications of the Mechanical building were considered, and referred to the Building Committee, to be reported back to-morrow.

The motion instructing the Building Committee to report to-morrow, was reconsidered, and the committee was requested to report immediately.

The Committee on Buildings and Grounds reported back the plans and specifications referred to them, without alteration.

On motion, Mr. Van Osdel was requested to read the specifications of the University building in full.

It was moved that the specifications read by Mr. Van Osdel, be adopted.

The vote was taken by ayes and noes, as follows:

Ayes—Messrs. Blackburn, Brown, Bown of Pulaski, Wright, Cobb, Cunningham, Edwards, Galusha, Griggs, Slade, Lawrence, Pearson, Pullen, Pickrell, Pickard, Scott, Van Osdel, Goltra, and the Regent—19.

Noes—0.

Judge Brown offered the following:

Resolved, That the plans of Drill Hall and Mechanical Building, presented to the Board, be approved and adopted, except that the end elevation shall be altered to correspond with the side elevation; and that the said plans be referred to Mr. Van Osdel, with directions to make said alterations before the same are placed in the hands of the Governor.

Resolved, also, That the specifications and estimates for said building, be approved, but that they be referred to Mr. Van Osdel, to be put in better form before they are presented to the Governor.

The resolutions of Judge Brown were adopted by the following vote:

Ayes—Messrs. Blackburn, Bowen, Brown of Pulaski, Cobb, Cunningham, Edwards, Galusha, Goltra, Griggs, Slade, Lawrence, Pearson, Pickrell, Pullen, Pickard, Scott, Van Osdel, Wright, and the Regent—19.

Noes—0.

Mr. Pearson offered the following:

Resolved, That Section 1 of Article III, of the By-laws for the government of the Board, be amended, by adding to said section the following: "*Provided*, that every motion, or resolution, contemplating any disbursement from the funds of the University, shall either emanate from or be referred to some standing committee, before final action thereon."

The resolution was adopted.

Mr. Pearson also moved that the Recording Secretary be instructed to have the by-laws and lists of the Standing Committees printed on cards for the use of the Board.

Carried.

Judge Cunningham moved, and it was voted, that the Regent receive bids for the erection of the buildings agreed upon, and that such bids be reported to the Executive Committee on the third Wednesday in May, for its approval.

On motion of Mr. Pickard, the Secretary was instructed to furnish transcripts of the action of the Board upon the plans and specifications of the new buildings, to accompany the plans when sent to the Governor.

On motion, it was voted that the vouchers for money drawn from the State appropriations, be first audited and signed by the Executive Committee, and then sent to the other members of the Board for their signatures.

The Board then adjourned.

MINUTES OF MEETINGS OF THE EXECUTIVE COMMITTEE, 1870-71.

FRIDAY, AUGUST 26, 1870.

The Executive Committee met pursuant to call, in the Regent's office, at the Illinois Industrial University, at 3:30 P. M., Dr. Gregory in the chair.

Present—Messrs. Brown, Goltra, Griggs, Lawrence, Pickrell and Wright. Messrs. Cobb and Cunningham arriving after a short time.

The minutes of last meeting were read and approved.

The Regent then read the report of the Professor of the Mechanical Department, giving account of work done and articles manufactured—and also gave a brief verbal report of the progress of the work on the University farm—and the contemplated alterations in the building. Dr. Gregory, as chairman of a committee to negotiate with Professor Miles, of Michigan, for the chair of Agriculture, stated that Professor Miles had declined, but that he had entered into negotiations with several persons, qualified for that chair. These reports were accepted.

The Regent then stated that, according to instructions, he had thoroughly advertised the opening of the University for the next year.

The report of the Bookkeeper was then read and approved, and an amount of $98 73, for petty expenses, disbursed by him, was allowed.

A number of bills was then audited and approved.

On motion, it was ordered that gas fixtures be put in the rooms of the Literary Societies.

On motion of Mr. Goltra, the Regent, Judge Cunningham, and Hon. C. R. Griggs, were appointed a committee to have the University building furnished with a steam-heating apparatus, to warm all public rooms and offices, and $2,000 were appropriated for the purpose.

The financial statement of expenditures, from March 12, to August 25, 1870, was then read and approved.

Statement of State and Current Appropriations and the Expenditures therefrom, till August 25, 1870.

Current Appropriations.	Appropriation made Mar. 11, 1870	Expended to date.
Deficit of 1869 and 1870	$1,728 00	....
Salaries	20,000 00	$10,676 24
Board expenses	1,000 00	671 61
Salary of Corresponding Secretary and Treasurer	1,000 00	970 00
Taxes on lands	1,500 00	....
Fuel and lights	1,000 00	439 30
Printing, stationery, etc	1,000 00	194 05
Building and repairs	1,000 00	175 14
Incidental expense	1,000 00	535 07
Drill Hall	2,000 00	....
Mechanical Department	1,000 00	888 87
Farm labor	1,000 00	1,340 44
Three fire extinguishers	225 00	132 05
Insurance	400 00	....
Audited accounts	500 00	482 87
State Appropriations:		
Carpenters account, chargeable to State appropriation	....	$1,073 41
Agricultural Department	$25,000 00	7,479 94
Horticultural Department	20,000 00	10,279 48
Books and apparatus	10,000 00	8,686 10
Chemical Laboratory	5,000 00	1,442 88
Total State appropriation expended		$28,961 81
Total Current appropriation expended	....	15,873 59
Balance	....	$18,479 41
Total State appropriations	....	$60,000 00
Expended in 1869	$14,570 58	
" to August 25, 1870	14,391 28	
		28,961 81
Balance	....	$31,038 19

E. SNYDER,
Book-keeper.

Judge J. O. Cunningham offered the following resolution:

Whereas the Trustees have already recognized the right of females to admission to this University; and, whereas, the public sentiment of the State seems to require an early fulfillment of the promise made by the resolution of the Trustees; and, whereas, the other leading Universities of this country have provided for the instruction of females; and, whereas, a number of young ladies have already made application for admission here; and, whereas, though our buildings are inadequate to the demand that will thus be made upon them, and though we have no rooms to offer for the special convenience of female students, and no special courses organized for them, we confidently look to the wisdom and generosity of the State, to assist us in our efforts to meet the public demand, made so imperative upon us; therefore, be it

Resolved, That the Regent and faculty be authorized to admit to the classes of this institution for instruction, such female students of proper qualifications, as may apply; provided they be first satisfied that the parents and guardians have provided for them proper homes.

After considerable discussion, the vote was called for, resulting as follows:

Ayes—Messrs. Brown, Cunningham, Pickrell, Wright, and the Regent—5.

Noes—Messrs. Cobb, Goltra, Griggs, and Lawrence—4.

On motion, the Board took a recess to the call of the chair.

The Committee met again at 7:30 P. M.

On motion of Mr. Pickrell, it was voted that an appropriation of twenty dollars be made from the Library fund, to be expended by Dr. Detmers in procuring additional books on Veterinary Surgery for the University.

A further appropriation of $1,000 was then voted for the Farm Account, and, on motion of Judge Cunningham, an exchange of lots in the southwest quarter of section 7, township 19, range 9, was agreed upon as desirable, and the Regent instructed to execute and deliver to Jane Hubbard the deed of a lot belonging to the University, upon the said Jane Hubbard executing and delivering to the University the deed of the lot belonging to her.

On motion of Judge Cunningham, a committee of three, Judge Brown, Messrs. Cobb and Pickrell, was appointed by the chair to report at the next meeting on the contemplated sale of a certain part of the Griggs farm.

On motion, Judge Cunningham was continued a committee for renting and collection of rents of the Griggs farm.

On motion of Hon. C. R. Griggs, the employment of a competent head farmer, until the chair of Professor of Agriculture would be filled, was referred to a committee, consisting of the Regent, Messrs. Pickrell and Goltra.

On motion, it was voted that tuition in this University be free.

Judge Cunningham moved that the question of the arrangement and work in gardens and orchards, and the employment of foremen there, be referred to the Regent and Prof. T. J. Burrill.

Carried.

On motion, Dr. Gregory was authorized to use one recitation room for a Preparatory Department.

The Committee then adjourned to meet again on Friday, September 23, 1870, at 3 o'clock P. M.

FRIDAY, SEPTEMBER 28, 1870.

The committee met at the Regent's office on Friday, September 28, 1870, at 4:30 P. M.

Present—Messrs. Brown, Cunningham, Cobb, Pickrell and Regent.

Absent—Messrs. Goltra, Griggs, Lawrence and Wright.

The committee on employment of a Farm Superintendent and foreman of orchards and gardens, reported and were discharged.

On motion of Mr. Pickrell, it was voted, that the lands of the University be divided into three departments:

1st. The Stock Farm.

2d. The Experimental Farm, with the gardens, nurseries and orchards.

3d. The Ornamental Grounds and Greenhouses; and that hereafter a foreman be employed for each.

On motion of Judge Brown it was decided that the compensation of the foremen of Stock and Experimental farms be fixed at $60 per month, that they be furnished a house, the use of one cow, and garden vegetables for the use of their families; provided that they be required to board hands employed on the farm in their departments at reasonable rates, and provided further that each employment commence the 1st of March in each year, and continue one year, unless sooner discharged.

The compensation of Mr. Franks, the gardener, was continued at $75 per month to the 1st of March, 1871.

On motion, it was further resolved, that foremen and superintendents be required to reside on their grounds.

On motion of Judge Cunningham, a sidewalk was ordered to be constructed in front of the lots on the south side of Springfield road and on the east and south side of the University Grounds.

It was further decided to inclose the yard south of the Mechanical shops with a tight board fence.

The following rules for the compensation of students' labor, were adopted:

I. As far as practicable, students wishing to labor shall be arranged in classes and assigned to the several departments *each month*, and such classes shall be governed by the same rules in regard to attendance as other University exercises.

II. The wages per hour shall be eight (8) cents, but may vary below this to nothing, and above to twelve and one-half (12½) cents, according to the efficiency and faithfulness of the student. To receive the highest price he must be fully competent to do the work and must be faithful in its performance.

III. The price per hour of work for each student shall be fixed by the Committee of the Faculty upon students' labor, at least one day before each monthly payment.

IV. Each Professor, with concurrence of the Regent, shall have the direction and control of the labor assigned to his department.

V. Efforts shall be made to furnish labor to all students asking for it, but nothing contained in these rules shall be so construed as to oblige any department to furnish labor when the interest of said department does not warrant it, neither shall students be prohibited from working in special cases by the piece or job.

The committee on sale of certain parts of the Griggs farm, reported as follows:

To the Executive Committee:

The committee appointed at the August meeting to consider the propriety of selling the northwest quarter of the northeast quarter of section 21, township 19, range 9—a part of the Griggs farm—to C. R. Griggs, report that they have examined the land and considered the subject, and recommend that the sale be made at the rate of $60 per acre, reserving, however, the right of way from the county road to the forty acre tract adjoining the foregoing on the east.

Respectfully,
A. M. BROWN,
EMORY COBB,
J. H. PICKRELL.

To the Executive Committee:

The undersigned, sub-committee appointed to sell the Griggs farm, would report that they have bargained to Christopher and William Burnett, the southeast quarter, section 21, at $60 per acre, and the south half southwest quarter, section 21, at $60 per acre, to Geo. W. Burton, upon condition that all deferred payments on the same bear 8 per cent per annum, payable semi-annually in advance.

Respectfully,
C. R. GRIGGS,
J. O. CUNNINGHAM.

These reports were adopted and approved.

The report of the Bookkeeper was then read and accepted, and an amount of $90 61 of petty expenses was audited and ordered to be paid.

A bill of Fuller, Finch & Fuller, for paints—$48 17—was allowed, and an account of Johnson, Huntley & Co. for a reaper was laid over until next meeting.

On a report of Prof. E. Snyder, two dozen of fencing swords were ordered to be bought, and $25 appropriated for the purpose.

On motion of Judge Brown, Messrs. Pickrell and Cobb were appointed a committee to purchase four car loads of stock cattle, to be paid for from the funds set aside for stock purchases.

The Regent was authorized to have last year's agricultural and scientific periodicals bound, and such other binding done as may be necessary in the University Library.

Dr. J. M. Gregory and Prof. T. J. Burrill, were authorized to employ foremen on farms and orchards.

The Committee then adjourned to meet again on Wednesday, November 2, 1870.

THURSDAY, NOVEMBER 10, 1870.

The Executive Committee met at the Regent's office, on Thursday, November 10th, 1870, at 6:30 P. M., Dr. Gregory in the chair.

Present — Messrs. Brown, Cobb, Goltra, Lawrence, Pickrell and Wright.

Absent—Messrs. Cunningham and Griggs.

The Regent read the report of Prof. S. W. Robinson, of the Mechanical Department, of the work and cost of the shop, and also his statement of the cost of the steam-heating apparatus put into the building under his direction. Total cost of material, freights, etc., $1,469 83.

The work was entirely done by the students of the Mechanical Department, and, on recommendation, the committee allowed a compensation of $100 for the work, to be adjusted by the Regent and Professor.

It was further voted that the unexpended amount of $400 from the appropriation made for the steam-heating apparatus, should be assigned to the Mechanical Department, to be expended in the manufacturing of models and apparatus for that department.

Dr. Gregory then read the report of Prof. Burrill, of the Horticultural Department, of the state of orchards and work done there, reporting also a number of donations of flowers, plants and trees for the department.

The report was accepted.

The Bookkeeper's statement of expenditures to date was then read and approved; an amount of $38 56, expended by him from the contingent fund, was audited and ordered to be reimbursed.

The bills presented for payment were then audited and allowed.

On motion, Dr. J. M. Gregory and Hon. W. C. Flagg were appointed a committee and authorized to arrange courses of lectures at Pekin, Cobden and some point to be selected in the northern part of the State.

It was further resolved that the Regent be authorized to engage Dr. Hull to give a course of lectures on Horticulture and Dr. Miles to give a course of lectures on Agriculture during the winter term.

On motion, it was decided that the sum of $400 be appropriated for the payment of insurance premiums, and that the Regent and Judge J. O. Cunningham be a committee to arrange the insurance on the various buildings as they may judge most proper.

The Regent then read a petition signed by 16 students, who, being provided with brass instruments, asked for instruction in music that they might act as a military band to the University Battalion.

After deliberation, the amount of $60 was granted for such instruction.

The meeting then adjourned, to reassemble on Monday, December 12th, 1870, at 3 o'clock P. M.

MONDAY, DECEMBER 12, 1870.

The Executive Committee met at three o'clock P. M., December 12, and proceeded to visit and inspect the University farm and gardens.

Present—Messrs. Brown, Cunningham, Goltra, Pickrell and Wright.

Absent—Messrs. Cobb and Griggs.

At 6:30 P. M., the Committee went into session at the Regent's office. It was decided that the reading of minutes of last meeting be dispensed with.

The following resolution of Judge A. M. Brown was adopted:

WHEREAS, Mr. A. C. Burnham has offered to sell to the University, bonds of the county of Champaign to the amount of $6,800, at par, and bonds of the township of Champaign, in said county, to the amount of $2,000, at the rate of 97½ per cent; and, also, bonds of Blue Ridge Township, in Piatt county, to the amount of $29,000, at the rate of 92½ per cent.; therefore,

Resolved, That the Regent, Treasurer and Chairman of the Finance Committee be, and they are hereby, authorized to purchase said bonds, or any part of them, if they are satisfied said bonds are secure.

The Regent then made a verbal report of the work carried on in the different departments.

In the Horticultural Department, drainage of a part of the Experimental grounds was continued. The heating apparatus was being put in the newly-erected greenhouse, by the students of the Mechanical Department, under direction of their Professor.

On the farm the work of the season was going on; 40 head of cattle having been bought lately for feeding purposes. In the building the services of a janitor have been dispensed with, and the work divided among the students. This method is giving full satisfaction.

The Regent then read a report made by him to the Governor, on the work of the University, and the contemplated wants for the next two years.

The report was approved. The general plans and suggestions of the Regent in regard to new buildings, were approved, and he was authorized to consult an architect and procure plans and drawings of them.

The financial statement of the Bookkeeper, of the expenditures and collections, was read and approved. Bills presented for payment were audited and ordered to be paid. Also an amount of $45 05 disbursed from the Contingent fund.

The bill of the "Illinois State Journal Company" for printing catalogues for the past two years, amounting to $786 14, was referred to the Hon. W. C. Flagg, the Treasurer, J. W. Bunn, Esq., and Mr. J. H. Pickrell.

The amount of $2,308 14, expended for the purchase of 40 head of stock cattle, was audited, and a warrant ordered to be drawn for the amount.

It was further decided, that twenty more young cattle be bought at the same prices.

The Regent was authorized to procure rope ladders, reaching the fifth story of the building, for use in case of fire.

On motion, certain surplus horses were ordered to be sold.

The following resolutions were then adopted:

Resolved, That the establishment of Agricultural Experiment Stations, such as conducted by Laws C. Gilbert, in England, and as those which have been established in such numbers, and have wrought so much good in Germany and France, is, in our opinion, vital to the agricultural advancement of our State.

Resolved, That we heartily concur in the petition to the Legislature to provide means for he establishment and care of such stations.

A petition having been presented by a number of the students for a course of lectures on English literature during the Winter Term, it was decided that, as other lectures had been provided for that term to the full extent of means, the request would be considered at some future time.

The meeting then adjourned, to meet again at the call of the Regent.

THURSDAY, JANUARY 19, 1871.

The Executive Committee met on Thursday, January 19, 1871, at 3 o'clock, P. M., pursuant to call of the Regent.

Present—Messrs. Brown, Cunningham, Goltra, Lawrence, Pickrell, Wright and the Regent.

Absent—Messrs. Cobb and Griggs.

The reading of the minutes of the last meeting was dispensed with.

The Regent made a verbal report on the work carried on in the various departments.

The sickness of the head farmer, Mr. G. S. Upstone, had necessitated the engagement of Mr. G. M. Rice, of Champaign, who being present, gave a statement of the work on the farm, and also concerning the stabling, feeding, and present condition of the cattle and hogs recently purchased.

In the Horticultural Department, grafting was in progress. Four hundred scions, of leading varieties, had been received from Mr. Chas. Downing, N. Y., and quite a number from Hon. W. C. Flagg, of Alton. Preparations for the spring work were being made.

One of the horses ordered to be sold at the last meeting had since died.

The heating apparatus in the new green-house has been completed, and is in full and satisfactory operation.

In the Mechanical Department, desks for eighteen students in the Chemical Laboratory had been made. Two large cabinet cases for the reception of zoological specimens and philosophical apparatus, are nearly completed. A thermometer graduating machine for an eastern manufacturing establishment, had been constructed, for which $150 were received.

The winter term of the current year had been entered upon with an increase of twenty-seven new students, and the lecture season of two weeks is closing to-morrow.

A clinic for the treatment of sick animals was established under the direction of Dr. H. J. Detmers, Veterinary Surgeon, using for that purpose the old stable south of the shops, and a class of twenty-six students were receiving instruction in the diagnosis and treatment of diseases.

The report of the Bookkeeper of the expenditures since last meeting was then read and approved; expenditures to the amount of $7 52 in excess of the contingent fund was allowed.

The bills presented for payment were then audited.

The Regent, as chairman of a committee on insurance, reported that the University Building had been insured in the Liverpool Globe Insurance Company for $35,000, at three-quarter per cent.

Dr. Gregory reported that rope ladders for fire-escapes had not yet been purchased, and recommended iron steps instead. The matter was referred to him and Prof. S. W. Robinson, with power to act.

The action of the Regent purchasing twelve hogs to follow the herd of cattle, was approved, and authority given to purchase more if needed.

The chairman of a committee on the employment of a superintendent on the farm, made a verbal report, giving names of several applicants. After a brief discussion, Judge J. O. Cunningham was added to the committee, and they were instructed to select and appoint such superintendent.

On motion, the cost of house built east of the orchard was transferred from the Agricultural to the Horticultural appropriation. It was decided that the rent of that house (now occupied by Prof. T. J. Burrill) be fixed at $150 per annum.

The Bookkeeper was instructed to credit the Mechanical Department for all their earnings, and the work done for other departments.

The meeting then took a recess.

Re-assembled at 9 o'clock, P. M., after attending the evening lecture of Prof. Miles.

It was moved and carried that a committee, consisting of the Regent, Messrs. Cobb, Cunningham and Goltra, be appointed to prepare a memorial on the wants of the institution, and submit the same to the Legislature in session.

It was also moved that the Regent be directed to dispense with the services of the carpenter, and any other employee whose services are not needed.

An account of Judge J. O. Cunningham, for sundry expenses, was referred to the Regent to be audited and allowed.

The Committee adjourned to meet at the call of the Regent.

WEDNESDAY, FEBRUARY 8, 1871.

The Committee met at the call of the Regent.

Present—Messrs. Cunningham, Goltra, Lawrence, Pickrell, the Regent.

The Regent reported that the sub-committee charged with the duty of employing a head farmer, had tendered the appointment to Mr. E. L. Lawrence, of Boone county, and it had been accepted. The terms of the engagement were indorsed by the Committee.

The following resolutions offered by Mr. Goltra, were adopted:

Resolved, That the thanks of the Committee are due and are hereby tendered to Mr. G. M. Rice, for his efficient services rendered at an extreme emergency, as foreman upon the farm.

Resolved, That the thanks of the Committee are likewise tendered to Mr. G. S. Upstone for his long and faithful services; and likewise the sympathy of the Committee is tendered him in his affliction, brought upon him by the breaking of his limb while in the service of the University.

Adjourned.

FRIDAY, APRIL 21, 1871.

The Executive Committee met after the adjournment of the full Board, at 1 o'clock, A. M., April 21, 1871.

It was moved that the question of the engagement of the Hon. W. C. Flagg as Superintendent of Experiments, on the grounds known as the Experimental Farm, be referred to a committee consisting of the Regent, Judge Cunningham and Hon. C. R. Griggs.

The Regent, as chairman of a committee appointed for the purpose, made a report on the salary of Orchardist, Mr. Vickroy, recommending that he be allowed $1,000, and charged $100 for rent of house. The recommendations were adopted, and it was further voted that he be allowed the use of one cow and pasture for same.

The question of engaging Dr. H. J. Detmers as Veterinary Lecturer for the next academic year, was referred to the Regent, Messrs. Cobb and Pickrell, with instruction to report at next meeting.

The proposition of the sale of stock cattle, and an exchange of horses, by Farm Superintendent Mr. Lawrence, was referred to Mr. Pickrell, chairman of the Farm Committee, with power to act.

The Regent was authorized to procure engravings of the new buildings and green-house, for the next catalogue.

It was voted that the Regent be authorized to make, with the concurrence of the Faculty, purchases of books from the Library Fund. (Current appropriations.)

The Committee adjourned to meet on the first Wednesday in June, 1871.

WEDNESDAY JUNE 7, 1871.

The Committee met on Wednesday, June 7th, 1871, at 9 o'clock, A. M., in the Regent's office.

Present—Messrs. Brown, Cunningham, Cobb, Lawrence, Pickrell, Pearson, Goltra and the Regent.

The reading of the minutes of the last meeting was dispensed with.

Upon recommendation of the Faculty, the Committee granted certificates of scholarship to the following students:

Messrs. Jared Teeple, Elgin; Isaac S. Raymond, Champaign; Henry L. Town, Batavia; James A. Williams, Urbana; Elvan F. Moore, Tolono; Samuel W. White, Paxton; Robert H. Hazlett, Springfield; Edwin B. Hazard, Lyndon; Edgar Sawyer, Tiskilwa.

Mr. J. M. Van Osdel was invited to sit and deliberate with the Committee in this session.

The Committee then took a recess to attend the commencement exercises, and re-assemble at 1:30, P. M.

The Committee met at 1:30, P. M.

The Regent made a verbal report on the plans, bids and proposals for the buildings to be erected, stating that the approval of the Governor had been obtained, and a number of bids received.

The Committee, thereupon, proceeded to open all the bids received.

On motion, the proposals were referred to a committee consisting of Messrs. Van Osdel, Cobb and Goltra, with direction to arrange these proposals, and report.

The Committee adjourned then, to meet again at 5 P. M., to attend the exhibition drill of the University Battalion.

EVENING SESSION.

Committee assembled at 5 o'clock, P. M.

Mr. J. M. Van Osdel made his report on bids, as chairman of appointed committee, as follows:

To the Executive Committee of the Industrial University:

Your Committee, to whom were referred the bids for classification, etc., would respectfully report as follows:

BIDS FOR UNIVERSITY BUILDING.

J. A. Glover	Chicago	Plastering	$11,300 00
Fowler & Carr	"	Carpentry	73,302 00
William Sollitt	"	"	55,400 00
A. Grannis	"	"	51,768 00
Allen & Bartlett	"	"	62,840 00
J. W. Smith	"	"	59,990 00
J. W. Smith	"	Complete, but cut stone	123,895 00
Peter Neu & Co	"	Cut stone	8,415 00
W. C. Deakman	"	"	9,295 00
Cavanagh, Merriman & Co	"	"	11,800 00
J. L. Bassett	"	Gas fitting	654 00
E. Price	"	Mason work	62,995 00
R. Jones	"	Painting and glazing	3,963 00
Holmes, Pyatt & Co	"	Iron work	6,480 00
N. S. Bouton & Co	"	"	6,400 00
L. H. Boldenweck	"	Cut stone	10,500 00
Joseph Hogan	"	Plumbing	545 00
J. Irons	"	"	800 00
J. Irons	"	Gas fitting	450 00
E. McFarland	"	Tin, copper and slate	5,164 00
E. Gehlman	Springfield	Complete	113,954 00
Fitzhugh & Rhodes	"	"	114,220 40
Bloomington Manufact'g Co.	Bloomington	"	130 000 00
Hopping & Ridgely	Springfield	"	130,781 00
N. C. Terrell	Kankakee	"	116,580 00

BIDS FOR MECHANICAL AND MILITARY BUILDING.

Fowler & Carr	Chicago	Carpentry	$10,165 00
William Sollitt	"	"	13,050 00
A. Grannis	"	"	10,807 00
Allen & Bartlett	"	"	14,200 00
J. W. Smith	"	"	11,550 00
J. W. Smith	"	Complete	21,200 00
E. Price	"	Masonry	9,650 00
R. Jones	"	Painting and glazing	715 00
N. S. Bouton & Co	"	Iron work	400 00
E. McFarland	"	Tin work	1,131 00
Tobias & Besore	Urbana	Complete	20,070 00
W. S. McWilliams	"	"	19,500 00
Swayze & Arthur	Champaign	"	19,000 00
Walker Bros	"	"	24,300 00
E. Gehlman	Springfield	"	16,361 00
Fitzhugh & Rhodes	"	"	21,603 00
Bloomington Manufact'g Co.	Bloomington	"	23,000 00
N. C. Terrell	Kankakee	"	24.155 00
Heafer & McGregor	Bloomington	Masonry	45,000 00

MISCELLANEOUS BIDS.

Bloomington Manufact'g Co.	Bloomington...	Both buildings	$149,900 00
R. Greenler	" ...	"	151,000 00
N. C. Terrell..............	Kankakee	"	148,744 00
R. Peacock...............	Champaign	Lumber, sash and doors	6,502 00
Wilson Dowell............	"	Painting, glazing, glass and putty to be furnished	1,900 00
Wilson Dowell............	Champaign	do. on Drill Hall.....	700 00
D. Wicks	....	Hauling lumber, 75 cts. per M., stone $4 50 per car....	....
J. Bellangee.............	....	Hauling lumber, 75 cts. per M., stone $4 60 per car; lime, 6 cts per bbl.; cement, 7 cts. per bbl	....

From the above figures, it appears that E. Gehlman is the lowest bidder for both buildings: On University Building, $113,954; on Drill Hall, $16,361. Next lowest on the University Building, Fitzhugh & Rhodes, $114,280 40; on Drill Hall, Swayze & Arthur, $19,000; 3d on University Building, $116,589; 3d on Drill Hall, W. S. McWilliams, $19,500.

The lowest bid for the several parts aggregated $119,262.

J. M. VAN OSDEL,
Chairman.

The report of committee was received, and, on motion, it was

Voted, That the proposition of Mr. E. Gehlman, of Springfield, to build both buildings, be accepted, and the contract be executed, upon the necessary security being given: *Provided*, that any alteration in the plans and specifications as now presented for said building, involving extra expense, shall be paid for upon the award of a disinterested committee—selecting one by each contracting party, they two selecting the third.

On motion of Judge A. M. Brown, the drawing of the contract and the approving of securities was referred to a committee, to consist of the Regent, Messrs. Cunningham, Griggs and Goltra.

It was further decided that the bonds for the University Building be fixed at $50,000; on the Mechanic and Drill Hall, for $10,000.

The Committee adjourned to June 8th, 1871, at 7 o'clock A. M.

THURSDAY, JUNE 8, 1871.

The Executive Committee met at 7 o'clock A. M., according to adjournment, and proceeded to locate and inspect the building site of the Mechanical and Drill Hall.

On motion of Mr. J. H. Pickrell, it was decided that the building for Mechanic shops and Drill Hall be located on the lots owned by the University, situated between Springfield road and the horse railroad, bringing the center of the building opposite the center of ——— street (east side of parade grounds,) the north side of said building being placed not less than eight feet from south side of said Springfield road. It was further voted that the foundation of the above building be laid as low as to bring the level of the ground-floor one foot over the present sidewalk.

On motion of Judge A. M. Brown, the Regent was authorized to contract for and have done, the excavating for the University Building; also, wells and drainage for same.

On motion of Judge A. M. Brown, it was—

Resolved, That the contracts for the construction of the University Building and Drill Hall shall provide, that at each monthly meeting of the Executive Committee, the contractor shall present an account of the value of materials for said buildings, placed on the ground by him, and also the value of labor done, which account shall be first submitted to Mr. J M. Van Osdel, the architect, for his approval. Upon his certificate of the correctness of such account, the same shall be allowed and proper orders for the money be drawn as required by law.

A report of the Corresponding Secretary, Hon. W. C. Flagg, of the work of the past year, etc., was accepted, viz:

REPORT OF THE CORRESPONDING SECRETARY.

Not being able to be present at the annual meeting of the Board of Trustees, I respectfully ask leave to report at this late day.

Our third annual report has been duly published and distributed, with the exception of 600 copies left in the hands of the State Binder to be bound in muslin, which were destroyed by fire with other State documents. By countermanding an order for distribution, 500 more copies were placed in the binder's hands, and I hope will soon be ready for use.

The increasing demand for bound copies of complete sets of our reports suggests the desirability of increasing the number of bound copies, which has hitherto, for economical reasons, been confined to 500 annually. We still have on hand, in paper, a large number of reports that can, as fast as needed, be bound in muslin, and in that shape will be more valued and better preserved by those who receive them. For the future I believe it will be better to ask the State authorities to bind the entire edition.

I have sent, as required by law, copies of our last report to the Secretary of the Interior and to the several colleges founded on the national grant, so far as such are known to exist; and to the Secretaries of the various States and Territories in which no colleges have yet been organized. I have also sent packages, by express, to gentlemen at those points where Industrial University lectures have been held, for distribution among persons who attended the meetings, and have made a very considerable distribution through members of the General Assembly, the Secretary of State, and the Secretary of the State Board of Agriculture.

Agricultural lectures and discussions were held at Champaign, January 9th to 20th, 1871; at Springfield, between January 12th and 18th; at Pekin, between January 23d and 26th, and at South Pass, February 6th to 9th. I was unable to be present at any except those held at Springfield, but learn that they were as a whole successful, though not always as well attended as could be desired. The fact that since we commenced these annual courses such institutions as the Iowa Agricultural College, Cornell University, and probably others have organized similar courses, goes to show that the plan is approved and imitated by industrial teachers in other States, and may encourage us to persevere in the same direction.

The exact cost of these lectures is not yet ascertained, but excluding those of Dr. Hull and Dr. Miles, who were primarily engaged to lecture before the students, they will cost considerably less than last year.

Applications have already been made for lectures at other points, and in case the Board approves, arrangements ought to be made at an early day for the next winter courses. We now have a State appropriation to aid us, which makes it perhaps obligatory to do so.

The time has come when, as I would respectfully suggest, the Board should make further provision than it has yet done to enable me to make the annual report of this Board a more thorough and complete attempt to collect our statistics bearing on the industries, and to obtain and set forth facts of observation and experiment.

We ought to have—

I. Meteorogical observations—of which I already have a large amount, collected from different observers in the State, but which should be carefully made, also, here at the University, by some person appointed for the purpose. Probably this could be done most cheaply by the employment of a careful and thorough person from among our students. It would furnish him remunerative employment, and insure he doing of a work which is too great for Professors already over-taxed.

II. Trials of Implements.—At least once in each year there should be held on the University farm a trial of plows, cultivators, harrows, eapers, mowers or some other class of implements, agricultural or or other. Our leading agriculturists should be invited to assist at these trials, and give their aid and counsel. The University would thus became more a center of attraction to the farmers and mechanics of the State, and its name and objects become better known.

III. Experiments in the effects of different degrees of heat, light, electricity and moisture on vegetation, should be carefully made, probably under cover, so as to better control the conditions.

IV. Chemical experiments, bearing upon the industrial pursuits, are of course still desirable and, as soon as the chemical-teaching force is sufficient to admit of so doing, ought to be zealously prosecuted. We need analyses of soils, coals, manures, plants, and annual products.

V. Experiments in practical agriculture, especially the growing of field crops and the breeding and feeding of animals. For this purpose, and the carrying on of annual courses of lectures, we have an appropriation of $3,000 per annum for two years, which should be applied to the best advantage for 1871 and 1872. On the Experimental farm there remains about 70 acres to be cared for this year, and which may be used next year for experimental culture. A small portion of this has already been staked into one-twentieth-of-an-acre plots, and a part has already been sown with grains and grass seed. The remainder of the staked ground, it has been suggested, might be planted to corn with a view of determining the variability between different plots in their productiveness. There still remains a large tract of land on which it would cost too much to endeavor to institute any detailed experiments, but on which, planted mostly to corn, a variety of experiments in varieties of grain, different kinds of seed, different depths and distances of planting, and the like, might be roughly tried. Several crops of other kinds ought to be tried in small amount—such as field peas and beans, rutabagas, carrots, parsnips, sugar beets, flax, hemp, broom corn, hops, mustard, etc.

VI. The collection of statistics, and their exposition by maps, tables, etc., is desirable. In this connection I would call attention to the maps of Mr. Fred. P. Wines, Secretary Board of Public Charities, exhibiting the corn and wheat crop of 1870, in this State, the density of population, etc., as affording some valuable hints.

In our last annual report I called the attention of the Governor and of the General Assembly to some of the above points, and, as we now have a partial appropriation, I hope that we may be placed in such condition as to go on and do more than we have yet done in observation, experimentation and statistics.

Respectfully submitted, W. C. FLAGG.

Dr. J. M. Gregory presented a report of the Professor of Mechanics, S. W. Robinson, asking for an appropriation to begin the construction of necessary machinery for the mechanical shops.

On motion of Mr. E. Cobb, $2,000 were assigned for the purpose aforesaid, and the Regent and Mr. J. M. Pearson appointed a committee to expend these funds.

A committee, consisting of the Regent and Messrs. Pearson and Goltra, was instructed to determine upon a compensation, to be paid by the contractor, Mr. E. Gehlman, for the use of working room in the present mechanical shop, and such machinery thereof as he may desire to use, and can be spared.

The Regent and the chairman of building committee were authorized to have such repairs and alterations done in the present University Building, as they may deem necessary, not to exceed the appropriation of $1,000 made by the Board.

The Regent was further authorized to allow the use of rooms in University to such students as may be employed here, and deserving such favor.

On motion of Mr. Pearson, it was—

Resolved, That the Committee on Contracts be instructed to prepare a proper form for the bills for the contractor on the buildings, and that some of these bills be sent in blank to the members of the Board of Trustees to secure the necessary number of signatures, so that when the signatures of the Executive Committee be added, the bills may conform to the law of appropriation for these buildings.

It was moved and carried that Dr. M. Miles be employed as Professor of Agriculture; that he give his services through the winter term, and receive a salary of $1,000.

The statement of Bookkeeper of expenditures was then read and approved, a number of bills presented for payment were audited and allowed, and a contingent fund of $75 for defraying petty expenses was placed in the hands of the Bookkeeper.

It was ordered that the balance of salaries for the academic year be paid.

The committee appointed to report on employment of Dr. H. J. Detmers, recommended the following resolution, which was adopted:

Resolved, That Dr. H. J. Detmers be employed to give a course of instruction in Veterinary science during the winter term of the college year; said instruction to comprehend the diseases of domestic animals, and the care and medical treatment of same, and the holding of a free clinic for the illustration of such treatment.

Resolved, That there be appropriated the sum of $600 as compensation for such service.

It was moved and seconded that $120 be allowed for the services of Prof. D. C. Taft, teaching geology during the spring term, 1871.

Carried.

J. H. Pickrell, Esq., of Harristown, presented to the University farm, two pigs—pure Berkshire breed.

Mr. Goltra moved that the gift be accepted, and the thanks of this Committee be extended to the generous giver.

Carried.

The Secretary was instructed to express the thanks of the Committee, in behalf of the University, to Messrs. Fenner & Call, of Urbana, Ill., for the donation of one superior Trench plow, patented by Mr. R. R. Fenner.

The Committee on contracts of Buildings was also authorized to temporarily employ a Superintendent of Buildings, if necessary, until the next meeting of this Committee.

On motion of Judge Lawrence, it was voted that the whole matter in reference to purchases for the library and chemical apparatus, be referred to the Regent, with power to act.

The Regent was further instructed to buy a pair of blooded pigs for University farm.

The Committee then adjourned to meet again at the call of the Regent.

FRIDAY, JULY 14, 1871.

The Committee convened at the Regent's office, at 10 o'clock, A. M., Dr. Gregory in the chair.

Present—Messrs. Cobb, Cunningham, Lawrence, Pickrell and the Regent.

The reading of the minutes of last meeting was dispensed with.

REGENT'S REPORT.

To the Executive Committee:

GENTLEMEN:—Since your last meeting, the contracts with Mr. E. Gehlman for the erection of the new mechanic shops and new University Building have been made in due form, according to your instructions; and the work on these buildings has already begun with great vigor. Mr. Gehlman's accounts for work and materials to date, will be laid before you. As these accounts must be signed by a majority of the Trustees before any money can be drawn on them from the State appropriation, they will need the signatures of the Executive Committee, and at least eight other Trustees.

The Committee charged with the choice of a Superintendent of Building, have employed, temporarily, Col. Shattuck. Under his directions the excavations, not provided for by the contract, have been made; and two wells have been sunk for the Mechanic Hall, and two for the new University Building.

The Agricultural experiments are going forward under the charge of Hon. W. C. Flagg. The general work on the farms and Horticultural grounds is more satisfactory in character that in any former year, and the condition of these departments is steadily improving. The machine shop has been provided with some new and valuable machinery, and the patterns are in preparation for a new steam engine, of sixteen horse power, for the new Mechanical Building.

Changes and improvements are in progress in the University Building, to fit it for the largely increasing numbers of students. Every room was bespoken for the next year, before the close of the past term, and seventeen names were left on file of students for whom no rooms remained. The applications now daily coming to hand, make it evident that something will need to be done to meet the demand for rooms the coming year. Doubtless, something will be done by private enterprise, and already there are parties proposing to erect cottages for the occupancy of the students. Should they fail, then it may be necessary for the University to carry out the plans heretofore proposed for the erection of a group of cottages.

In the new arrangements, provision is to be made for the greater convenience of female students, of whom a much larger attendance is expected next year. Having decided to attempt the education of young women at the University, it is due that every practicable provision shall be made to afford them the highest facilities for such education as they may need. Having this in mind, I recently visited the School of Design at the Cooper Institute, in New York city, to ascerain how far its plans are adapted to the University. In the selection of additional teachers—especially the teacher of drawing—the wants of ur female students should be held in view.

In accordance with your vote, the annual circular has been issued, nd 20,000 of the same, in paper form, are now being distributed hrough the State.

I herewith present the Bookkeeper's statement, and the accounts to e audited.

J. M. GREGORY,

Regent.

The report of the Bookkeeper, containing statement of expenditures, abstract of vouchers and collections, was then read, and bills presented for payment were audited and allowed.

Judge J. O. Cunningham offered the following resolution, which was adopted:

Resolved, That Mr. E. Gehlman be permitted to use so much of the clay on the west side of the site of the new University Building, for making brick, as he may require, provided he replace the clay thus used, by soil, to the required grade; and provided, further, that the surface soil be removed to the east side of the building, and that all rubbish be removed immediately upon the burning of the brick.

On motion of Mr. E. Cobb, vouchers were drawn and signed by the Committee for the following amounts:

E. Gehlman, on certificate of Superintendent J. M. Van Osdel, for material, etc., for Mechanic Hall	$6,812 60
For material, etc., for University Building	202 00
Dr. Gregory, expenses for plans, etc	83 50
S. W. Shattuck, excavation wells for University Building	322 88
S. W. Shattuck, excavation wells for Mechanic Hall	64 00
C. L. Rice & Co., machinery for shops	1,278 50
J. W. Bunn, State appropriation	5,000 00

The Committee on employing a Superintendent, reported that they had temporarily employed Prof. S. W. Shattuck to act, under instructions of Mr. J. M. Van Osdel, the Architect.

The report was approved, and Prof. S. W. Shattuck continued as local Superintendent of the building in progress of erection.

On motion of Mr. J. H. Pickrell, the Committee adjourned to meet again on Wednesday, August 2, 1871, at 3 o'clock, P. M.

WEDNESDAY, AUGUST 2, 1871.

The Committee met at 3 o'clock, P. M., in the Regent's office.

Present—Messrs. Brown, Cobb, Cunningham, Goltra, Pickrell and the Regent.

The reading of the minutes of last meeting was dispensed with.

The report of the Bookkeeper, his statement of expenditures to date, and of collections, were read and approved.

The bills presented for payment were then taken up, audited and allowed.

The Committee took a recess till 7:30 P. M.

The Committee re-assembled at 7:30 P. M.

Dr. Gregory and Judge Cunningham were appointed a committee, with power to act, to have lightning rods put on the barns and house on Horticultural grounds.

The Regent was authorized to employ the following assistants and teachers: Mr. R. B. Warder, assistant in Chemical Department, at a salary of $1,000 per annum.

Mr. I. D. Foulon, as teacher of French, and general assistant, at a salary of $75 per month, for ten months. A private Secretary at a salary of $50 per month.

The Regent reported the progress of negotiations to obtain a competent drawing teacher, and was authorized to employ the candidate named at a salary of $1,000 per annum.

It was voted that there be employed a competent assistant Professor of Civil Engineering, at a salary not exceeding $1,500.

The Faculty were authorized to change the course of Veterinary lectures from the winter to the fall term, if found desirable.

A hard wood floor was ordered to be laid in the main hall and corridors of the first story.

On motion, permission was given to the Farm Superintendent to sell the old hay press, and dispose of implements worn out or not desirable—excepting those that were donated to the University.

It was moved and carried that the Regent be directed to have the garden barn moved, and fitted up in rooms for students.

The Regent was also authorized to have students' rooms fitted up in the Agricultural Museum, if it should become necessary.

Voted to purchase scales required for Experimental farm.

The purchase of thirty tons of hard coal, and one hundred tons of Illinois coal, for winter storage, was approved.

On motion of Judge A. M. Brown, it was

Resolved, That the Regent and chairman of the Agricultural Committee be authorized to purchase a male and female of the Hereford cattle, mentioned in a recent letter from Dr. Miles to the Regent; and that they are also authorized to purchase such individuals as they may deem necessary of other breeds of cattle or other stock, provided that such expenditures shall not exceed the sum of $3,500.

The making of the necessary settees, library cases, desks for Chemical Laboratory, and purchase of matting for library, was referred to the Regent, with power to act.

On Mr. Cobb's motion, the Regent and Judge Cunningham were made a committee to purchase a bell, weighing at least 1,000 pounds, for the new University Building.

The following preamble and resolution of Judge J. O. Cunningham were adopted:

WHEREAS it is represented that the Architect of the new University Building recommends the use of iron columns under the floor of the chapel in the southeast wing; therefore,

Resolved, That the contractor for construction of said building be requested to put in such columns, in lieu of the brick piers, provided that the size and shape of such iron columns be approved by the Architect.

The following bills on new building were then approved, and vouchers drawn and signed for the same:

E. Gehlman, main building, material and work	$8,429 90
E. Gehlman, Mechanic and Military Hall, same	5,952 58
S. W. Shattuck, summary of bills for wells, brick for same, grading, superintending services, etc	315 30

The Committee then adjourned to meet again on Wednesday, the 30th of August, 1871, at 4 o'clock, P. M.

J. M. GREGORY,
Regent.

E. SNYDER,
Recording Secretary.

COURSE OF AGRICULTURAL LECTURES AND DISCUSSIONS.

Agricultural lectures and discussions were held at the University, January 9th to 20th, 1871; at Springfield (evening meetings), January 12th to 18th; at Pekin, January 23d to 26th; and at South Pass, Feb. 6th to 9th.

A few of the lectures delivered, that seemed, from the nature of the topics discussed, to be of special interest, are subjoined.

The programme of lectures was as follows:

AGRICULTURAL LECTURES AND DISCUSSIONS AT THE UNIVERSITY.

The Third Annual Course of Agricultural Lectures and Discussions will begin at the University, in Urbana, Champaign County, on Monday, January 9th, 1871, and continue two weeks; five days of each week, and with three sessions in each day.

The attendance of all persons interested, and especially of the young Farmers of Illinois, is cordially invited, for the purpose of discussing the best methods of agriculture, and the crops and animal products of the West. No charge is made for attendance. The University provides a hall, properly warmed and lighted, and pays the expenses of the gentlemen who have consented to open the discussions. Each lecture, address, and talk, will be followed by a discussion of the same topic, in which all are invited to participate.

Good boarding places can be had, convenient and at reasonable rates. Railroad companies will be solicited to return persons in attendance at reduced rates.

J. M. GREGORY,
Regent of the University.

W. C. FLAGG,
Corresponding Secretary Board of Trustees.

ORDER OF BUSINESS.

MONDAY, January 9th—2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., Dr. J. M. Gregory, Place of Agriculture in Political Economy.

TUESDAY, January 10th—9 A. M., Dr. M. Miles, History of Agriculture; 2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., Professor J. B. Turner, Climate and our Climatological and Agricultural Wants.

WEDNESDAY, January 11th—9 A. M., Dr. M. Miles, Relations of Science and Agriculture; 2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., Parker Earle, of South Pass, Pears.

THURSDAY, January 12th—2 P. M., Dr. M. Miles, Tendencies of Pioneer Farming; 2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., Dr. Wm. LeBaron, State Entomologist, Entomology.

FRIDAY, January 13th—9 A. M., Dr. M. Miles, Principles of Mixed Husbandry; 2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., Professor S. W. Robinson, Work and Force and their Practical Application.

MONDAY, January 16th—9 A. M., Dr. M. Miles, Rotation of Crops; 2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., Prof. A. P. S. Stuart, Agricultural Chemistry.

TUESDAY, January 17th—9 A. M., Dr. M. Miles, Rotation of Crops; 2 P. M., Dr. E. S. Hull, Horticulture.

WEDNESDAY, January 18th—9 A. M., Dr. M. Miles, Rotation of Crops; 2 P. M., Dr. E. S. Hull, Horticulture.

THURSDAY, January 19th—9 A. M., Dr. M. Miles, Manures; 2 P. M., Dr. E. S. Hull, Horticulture.

FRIDAY, January 20th—9 A. M., Dr. M. Miles, Manures; 2 P. M., Dr. E. S. Hull, Horticulture; 7 P. M., S. T. Burrill, Flowerless Plants.

NOTE.—In addition to his lectures given in the above course, Dr. Miles will deliver before the students of the University, about twenty other lectures upon Agricultural topics, making about thirty in all, covering the whole ground of field culture, domestic animals, manures, etc. The whole of this longer course would be highly desirable to any farmer, and is strongly recommended to young farmers who can afford to spend a month at the University. A fee for "incidentals," amounting to $2 50, is the only charge.

AT SPRINGFIELD.

It is proposed to hold a short series of evening meetings at Springfield, under the joint auspices of the Illinois State Agricultural Society and of the Industrial University, during the session of the Executive Committee of the Agricultural Society and of the General Assembly, many of whose members are farmers, or others interested in agricultural progress.

The following gentlemen have consented to be present and address the meeting, on the evenings named:

Thursday Evening, January 12.

Dr. Manly Miles, Professor of Agriculture in the Michigan Agricultural College, will lecture on Agricultural Education and Experimental Stations.

Friday Evening, January 13.

Dr. E. S. Hull, Horticultural Lecturer in the Industrial University, will deliver an address upon Horticulture.

Monday Evening, January 16.

Prof. J. B. Turner, of Jacksonville, will lecture on Climatology, and our Climatological and Agricultural Wants.

Tuesday Evening, January 17.

Prof. J. B. Turner will lecture in the continuance of the same subject.

Wednesday Evening, January 18.

Dr. J. M. Gregory, Regent of the Industrial University, will lecture on the Political Economy of Agriculture.

AT PEKIN.

The following series of free lectures and discussions, on Agricultural topics, will be held under the auspices of the Illinois Industrial University. The farmers of Tazewell and adjoining counties are cordially invited to be present, and assist in the discussions:

Monday, January 23.

2 P. M.—An Introductory Address, by Lemuel Allen, Esq.; Drainage and Irrigation, a lecture by Prof. S. W. Shattuck, of the Industrial University.

7 P. M.—The Political Economy of Agriculture, by Dr. J. M. Gregory, Regent of the University.

Tuesday, January 24.

9 A. M.—Dr. E. S. Hull, on Horticulture.

2 P. M.—Dr. E. S. Hull, on Horticulture.

7 P. M.—Dr. Manly Miles, Professor of Agriculture, Michigan Agricultural College, on Principles of Mixed Husbandry.

Wednesday, January 25.

9 A. M.—Dr. Miles, on Rotation of Crops.

2 P. M.—Dr. Miles, on Manures.

7 P. M.—Prof. A. P. S. Stuart, of the Industrial University, on Agricultural Chemistry.

Thursday, January 26.

9 A. M.—B. S. Prettyman, Esq., on Cultivation and Husbandry of the Cereals.

2 P. M.—Prof. W. M. Baker, of the Industrial University, on Ancient Agriculture.

Each lecture, address or talk, will be followed by a discussion of the topics embraced therein.

AT COBDEN OR SOUTH PASS—FREE.

Under the auspices of the Industrial University, the following lectures or addresses, each to be followed by a discussion on the topics embraced therein, will be held at Cobden, February 6th to 9th, 1871:

Monday, February 6.

2 P. M.—Prof. T. J. Burrill, of the University, will lecture on Flowerless Plants, including the Fungi.

7 P. M.—Dr. J. M. Gregory, Regent of the University, will lecture on the Political Economy of Agriculture.

Tuesday, February 7.

9 A. M.—Dr. Wm. LeBaron, State Entomologist, on Entomology.

2 P. M.—Dr. E. S. Hull, on Horticulture.

7 P. M.—Dr. E. S. Hull, on Horticulture.

Wednesday, February 8.

9 A. M.—Dr. Manly Miles, Professor of Agriculture in the Michigan Agricultural College, will lecture on the Principles of Mixed Husbandry.

2 P. M.—Dr. Miles, on Manures.

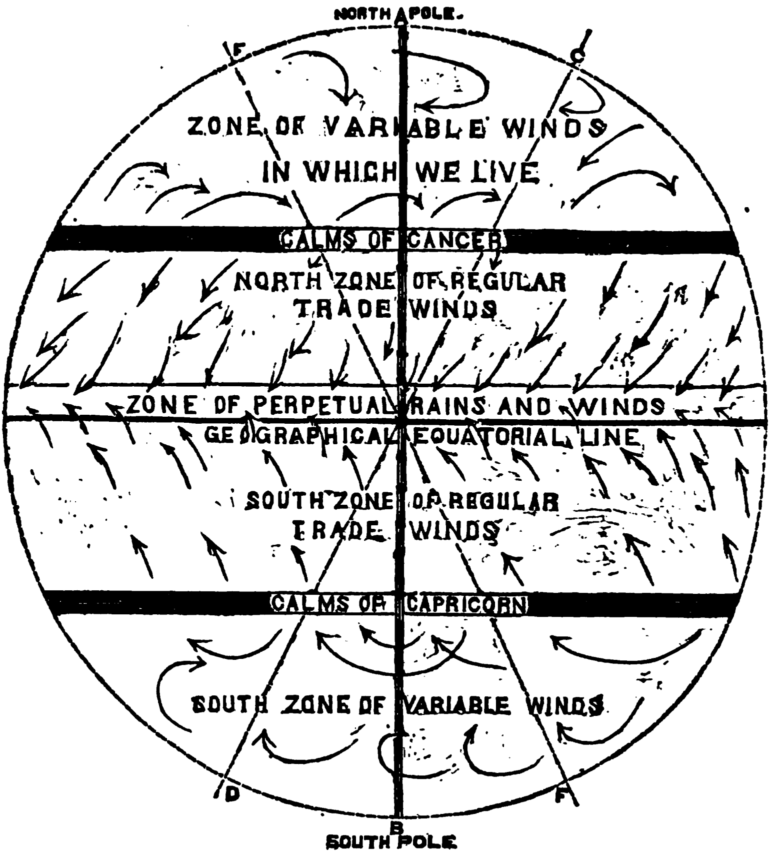
7 P. M.—Judge A. M. Brown, of Villa Ridge, one of the Trustees of the University, will give an address.

Thursday, February 9.

9 A. M.—Prof. A. P. S Stuart, of the University, will lecture on Agricultural Chemistry.

A DISCOURSE ON CLIMATE.

BY PROFESSOR J. B. TURNER, OF JACKSONVILLE.


NORTH POLE.
A
F
C
ZONE OF VARIABLE WINDS IN WHICH WE LIVE
CALMS OF CANCER
NORTH ZONE OF REGULAR TRADE WINDS
ZONE OF PERPETUAL RAINS AND WINDS
GEOGRAPHICAL EQUATORIAL LINE
SOUTH ZONE OF REGULAR TRADE WINDS
CALMS OF CAPRICORN
SOUTH ZONE OF VARIABLE WINDS
D
F
B
SOUTH POLE

EXPLANATION AND REMARKS ON THE DIAGRAM.

I. The Meridianal or diurnal line or belt of maximum heat (A. B.) revolves round the globe every twenty-four hours, with the sun, and over each meridian about three o'clock in the afternoon, at right angles to the equator.

The Equatorial, or *annual line, or belt* or *zone*, of maximum heat, on the contrary, swings from north to south between the tropics parallel with the equator, advancing and receding with the sun, and the returning seasons of each year. The point, or area, or focus, of gre heat on the globe is where these two lines intersect, as at ○ ○ ○, which point of course re volves around the globe every twenty-four hours, and tends to draw all the great surface air currents after it, and to deflect all the other currents toward it. The upper return currents of air, including what are called the *counter trade winds*, move in directly the opposite direction to the surface currents (as indicated by the arrow-heads of the diagram), when not disturbed by local forces. The perpetual intersection of the several parts of this great cross-belt of maximum annual and diurnal heat, with its maximum focus of heat at its center, is the natural and necessary cause of the deflection of the trade-winds toward the west, and the upper return currents toward the east, so generally, however foolishly, attributed to the varying velocities of different parallels of latitude—as any one can see from a moment's reflection. For it is plain that the zone or belt of maximum heat or wind-power on the earth's surface is not a single belt, encircling it from east to west near the equator, as is commonly represented, but a cross of belts, the one running east and west with its annual slides, the other at right angles to it, with its diurnal rotation and focus of maximum heat ever attending it. It may be, to some, an interesting coincidence, that our natural sun, at the maximum of his effulgence and power, exerts his paramount influence on our globe through a form of a cross, and not, as scientists have taught us, through one continuous mathematical line or belt around it. An adroit devotee to analógies, or correspondences, could write a whole ship-lead of books on this simple fact, not wholly without interest.

II. When the sun is over the equator, and the days and nights are equal, the *crepuscular line*, as it has been called, or line of daylight, is parallel with the meridianal line of maximum heat, (A. B.); and the point or forces of greatest heat (☉) will revolve on the equator. But when the days are longest, and the sun is over the tropic of Cancer, this line of daylight will be E. F.; which line will bound the hottest hemisphere of the globe, toward which all great air currents must tend E. A. C. F.; being deflected toward a line at right angles with the line E. F. This of course strengthens the tendency to our south and southwest winds in summer; for precisely the opposite reason, when in our shortest days in winter, the sun is over the tropic or calms of Capricorn, and this crepuscular line has swung around to C. D., and C. F. B. D. becomes in turn the hottest hemisphere of the globe, all our winds tend more strongly to blow from the northwest toward the line C. D.—while our prevalent west winds, in March and September, are also measurably owing to this very obvious and simple course, as this line is then due north and south, or at A. B. These are the principal well-known primal causes, which determine the perpetual flow and reflow of the great air-currents, and the peculiar climate of our globe. In a single word it is the power of the sun; and what a mighty power that is; and yet how gently, and quietly, and silently it works, through all its infinitely varied rounds and tasks! The means are as simple as the ends are various and infinite. Doubtless other local and modifying causes are as endless as they are varied; but here, alone, we find the great primal moving cause of all we behold in these incessant changes of seasons and years.

DISCOURSE.

It will be my object, in this discourse, to give the present impressions which all my previous readings and reflections have made on my own mind, in regard to climate, without intending to cite at length the proofs of their correctness, nor indeed to affirm it at each and all points in question.

Everybody knows that we are at present in no sort of condition to present a science of meteorology, and may not be for five hundred years to come; and the best way perhaps to help it along is for each one to state frankly his own impressions, a free-will offering to the common stock.

For the sake of brevity and directness, I shall, without intending to dogmatise, give my discourse wholly the dogmatic form, and let it pass for what it may seem to each one to be worth. I found myself necessitated to give some general view of the whole subject, in order to get any one of its parts into its true relations, and to lift our minds, if possible, out of those miserable ruts of mere authority, which, if apposite to anything on earth, surely has no place in any mere physical inquiry. Telling you what I think, may possibly aid you in finding the same great laws and facts in nature I fain would describe; but if not, my words are of no more consequence to you than the chirping of a grasshopper.

Were the whole solid body of the earth made up of one homogeneous material, and were its surface covered on all sides to an equal depth with water, there can be scarce a doubt that all the currents, both of the ocean and of the air, the distribution of heat and cold, of sunshine and rain, at the same latitudes and in the same seasons of the year, would be as uniform as the return of the seasons, or as the rising and setting of the sun, or its advance from one tropic to the other—though probably the varied position of the moon, or of the other planets, would add another item of a more or less disturbing force. All, or nearly all, our present irregularities in our ocean currents and air currents, and dependent changes of heat and cold, or drought or rainfall, are due therefore to the irregularities of the earth's structure and surface, more than to all other causes combined.

The solid parts of the earth are composed of a great multitude of heterogeneous or diverse materials, differing very widely in specific density and gravity in their capacity of holding or attracting water, heat, electricity, etc., while only parts of it are covered with water of very unequal depth, and other parts spread out in plains, or piled up into mountains of very unequal hight. The continents land-lock and interrupt the regular ocean flow and throw immense floods of warm water toward the poles, wholly revolutionizing the distribution of heat and cold, under the varying law of these currents, while the icebergs of the nothern seas are perpetually carting millions of tons of solid rocks, sand and earth from the nothern pole toward the equator, in some cases, as in the banks of Newfoundland, building up whole new continents of land under our present seas.

Such is also the present shape of our continents that nearly all the immense debris and wash from the action of water or frost, in our Northern Hemisphere, by the course of our rivers toward the south, or the action of glaciers and icebergs at the mouth of those flowing to the north, combined with the existing course of our present winds and ocean currents—all this debris is at last borne from north to south, or piled up, so to speak, toward the equator: while the whole Southern Hemisphere presents, so far as we know, absolutely no counterbalancing series of actions or of forces.

Do our extant savans really believe that if you should shovel dirt, even with a teaspoon, from the fore end of an evenly-balanced cart toward the hind end, the cart would at last inevitably tip up, even though it might take millions of years, if the rate of removal was slow enough? If so, it is just as inevitable, under present well known conditions, that the earth must have an insensible revolution, or at least oscillation, from pole to pole, as really and inevitably as it has a more rapid daily revolution from east to west; and that, sooner or later, this inevitable movement, if continued in the same direction, would produce the astronomical change of bringing the pole where the equator now is, and throwing the equator where the poles are, even though it might take millions of years to effect the change, and though all our instruments for fixing latitude might prove quite too coarse to detect any change since they became known to man. The inevitable results of this constant change of our actual equator and polar line are quite self-evident, though not, so far as I know, anywhere adverted to. The polar diameter of the earth being twenty-six miles shorter than the equatorial diameter, should this change of poles be made at once, it would whelm each pole some thirteen miles under the seas, while the strain of the tremendous centrifugal force at the equator, on the solid and immovable parts of the globe, would generate new forces of heat and electricity all round and near the equator, and in two or more divergent lines toward the poles, which would either generate or expand and explode gasses, and produce earthquakes, volcanoes, etc., etc., enough in those regions to blow the earth all to pieces, and force it to resume substantially its present normal shape, under its new conditions.

But all this does not and cannot happen at once; hence the very same phenomena are more moderately distributed over a very long series—probably of millions—of years. But they are all actually here, and daily before our own eyes, if we will but open our eyes to see them.

Of course the watery and fluid parts of the earth, that lie unconfined on its surface, easily readjust and conform themselves to every change as it progresses. Hence we find the European and Greenland sides of the globe apparently sinking, as it is said, but actually rising toward the equator, and of course dipping under the new adjusted seas, to which they cannot yet conform. All history shows also that these European climates have been growing warmer from the earliest records;

that is, that while they thus dip under the sea, they in fact rise toward the equator, and become warmer, and relatively to the ocean lower, at one and the same time. Coincident with this, other parts of the earth are relatively rising, or moving toward the poles, and growing colder, at one and the same time; while all well know that all parts of the earth show that they have sometime been beneath the seas, and probably many times; and all the regions of the equator and lower latitudes bear still the marks of polar glacier or avalanche furrows made while they were under or near the poles; and all parts of the frigid zone are filled with the remains of tropical animals and vegetable life, that were produced when nearer the equator, and buried there under the incessant earthquakes, land-slides and other catastrophes necessarily perpetual in those regions, from the simple cause above indicated, and there preserved, buried perhaps for ages, till again disemboweled in their changed position by the action of polar frosts and the new sweep of polar waters and seas.

These evidences of the action of the seas, over even the highest parts of the continents, are so universal and so obvious to all common-sense observers, that no writer on cosmogony, sacred or profane, has been fool enough to wholly overlook them, or to pass them by without his own account of a flood, or some other catastrophe adequate, in his view, to account for the facts so self-evident and open to all.

But now we also find the great sea itself is giving up its secrets, if not its dead, and disclosing the fact that the same stratas of coal, chalk, limestone, sandstone, etc., that we find on the continents, are now in process of formation beneath its depths, preparatory to future upheavals, or changes in position. So far as I am aware, the constantly recurring fact of volcanos, earthquakes, and violent convulsions near the equator, and formerly along the lines converging to the poles, as indicated by the extinct volcanic mountain ranges of America, and the still active ones on the other side of the earth, through the Japan Islands, at the present day, and other facts which it would require volumes to recapitulate, all concur in supporting this very simple, but still potent theory; so that we have after all really no need to fill good old mother earth with water, or fire, or wind, as if we would throw her into a fit of the cholic, or alternate fits of fever and ague; or explode it into vapor or gas, in order to rationally account for her very sober, and steady, and uniform, and perpetual work, done before our own eyes, as much, and as fast, and as silently and effectually as in any age before so far as we can know. All the facts go to show that there have been numerous submergals or dipping in and out of the waters, of the very soil on which we stand; and if present laws and causes continue to operate, there must be many more of them; so that when Solomon said that there was "nothing new under the sun," he spoke more truth than probably he himself was aware of.

But I am at present interested only in noting the tremendous effect such geological and astronomical changes must have on the local climates of our globe; putting seas where continents have been, and *vice versa;* heaving up new mountain ranges and islands; creating new deserts or fertilizing old ones; generating new volcanoes or local heats, or feeding old ones; and all from a primal cause as easy, simple and silent as the revolving of a grindstone, or of the action of gravity itself. Where our valley will be a million years hence, how near to the then equator or poles, or how deep under the seas, it is of course impossible to predict; but that we shall not be exactly where we now are, even one hundred years hence, is as mathematically certain as it is that the laws of gravity and of heat and force will continue to operate, though however slowly.

We can, perhaps, form some idea of the heat that must be generated near the equator by this simple disturbance of the earth's equilibrium, when we reflect with what force a revolving grindstone sometimes flies apart, and that the velocity of the whole surface of the earth near the equator is some twenty times faster than that of the most rapidly running locomotive wheel; and that all this interrupted force, by the law of conservation of force, must run into heat, on the lines of its greatest strain, at or near the equator, and on some converging line toward the poles. The general effect of this, on local climates and changes of climate, are self-evident, though not sufficiently known, as yet, to justify detailed predictions.

In a paper read before the Natural History Society of Illinois, and published in the Transactions of our State Agricultural Society, I had occasion to notice the effects which the great "avalanche of the ocean," —as I termed it for want of a better name—has on the climates of the globe. I wish now only to remark that it is self-evident that those causes which affect the equilibrium of the earth about its poles, must, also, to the same extent, affect those great ocean currents, and change their influence on all climates.

The temporary and permanent effects of spots and changes on the surface of the sun, on the climate of our globe, are too little known to be definitely described or predicted; though, when we reflect that in the former revolution of the sun's spots in 1859, a sudden efflorescence of his disc, as observed by two astronomers, instantly produced an universal meteoric storm, which affected all the electrometers and telegraphic wires throughout America, Europe, Asia and Australia, so far as known, we must believe that such changes in the source of our solar light and heat must exert a great influence on the climates, as well as on the condition of health or disease in all animal or vegetable life.

Another astronomical cause is the tidal waves raised both in the ocean and the atmosphere, through the influence of the sun and the moon. Prominent among these is that peculiar effect observed and symbolically described by people half around the globe, savage and civilized, by the "horns of the moon being up or down," or the "wet and dry moon," as they sometimes term it. I am aware that some philosophers, so-called, are accustomed to deride this, and all other observations of the unsophisticated common people, expressed in their peculiar symbolic and unscientific language; but it would be proper in this, as well as in many other cases, for a real philosopher to inquire how so many and diverse peoples—farmers, sailors and Indians, men of all races, and from both continents, whose business and interest it is to watch the sky—happened to hit upon the same sign of rain, if there is nothing in it, and to express it much in the same way. Let us simply translate this same fact into current scientific popular language, and see how the case then stands. It is agreed on all hands that rain is produced by commingling cold and warm currents of air, and the greater the agitation of the air, from whatever cause, the more sure the rainfall, all other things being equal. Now, when the horns of the moon are up, it is following directly in the path of the sun, and both the sun and the moon produce but one and the same tidal wave in the atmosphere, like the wake of two steamboats following each other in the water; but when the horns of the moon are one of them down, the moon is running wide of the sun, and they are producing two conflicting tidal wakes which meet like the two conflicting wakes of two steamboats running side by side, and of course must produce a greater agitation of the air where these wakes meet, and, all other things being equal, tend strongly to the production of rain, if there is at the time any moisture in the air out of which rain can be made; but if there is none, as in long droughts sometimes happens, of course that sign or cause, like all others, must fail.

The manner in which the regular trade winds set in toward the equator on the open seas, and, meeting, thread through each other near the equator, producing a narrow belt of almost perpetual rains and thunder storms just north of the equator, nearly round the whole globe, in their conflict in meeting and in passing; and how the return currents sometimes called the counter-trade winds, thread through and flow on in the higher regions of the air, over the same lines, toward the northeast in our latitude, producing on each side of the equator a zone about twenty degrees or some twelve hundred miles wide of regular trade winds and periodical rains, and, descending, to wheel into line again, for a new advance toward the equator, producing a wide belt or zone of variable rain storms, under which we live, that swings toward the north or the south as the sun advances or recedes, with some little degree of regularity, giving us what we call our equinoxial and other storms—all this is well known to all. The manner in which this return current or counter-trade wind, blowing toward the northeast, high up over our heads, and bringing us all our greatest rain or snow storm, continues to bear along its watery clouds, and steadfastly refuses, for whole days or weeks in succession, to mingle with the lower currents, from whatever quarter they may blow, carrying their own burden of lower clouds, may be seen by any one who will lie down on his back and watch as they pass these two different and often directly opposite currents of winds and clouds, though the reason why such currents refuse so obstinately to mingle together cannot be fully explained by any one, no more than we can explain why the waters of the Gulf Stream refuse to mingle with that of the surrounding ocean, in despite of the awful force of all possible storms, winds, waves and tides. It may be that they are in a state of constant electrical repulsion, like the redoubling rings of smoke blown from the bowl of a pipe.

These are perhaps the principal geological and astronomical causes of changes of climate to any extent known to us. I have made no account of the well-known fact that the temperature of the earth seems to increase in a regular ratio as we descend into it, because, to my apprehension, that fact has as yet taught us nothing but the bare fact itself. It may proceed simply from the different ratios of the absorption and radiation of heat from the surface, or from the centrifugal force and force of gravity co-operating with the force of the heat derived from the sun, to augment the heat in a spherical plane at a small distance below the surface of the earth, as Dr. James seems to have supposed; or it may arise from a thousand unknown causes, which would limit the phenomena wholly to the surface, or near the surface of the earth, without implying that there is heat, or indeed anything else but air or gas, it may be, at the center of the globe. Certainly, it is no proof that there is now or ever was in that center any heat, not constantly generated by its natural and constant actions and forces, from simple causes above described. If the gadflies in boring into an elephant's hide, should find it, wherever they punctured, growing hotter and hotter, and tougher and tougher as they went in, they would know simply that fact; but if the gadfly philosophers should proceed to infer that the elephant was all a lake of fire within, or all tough hide through and through, the gadfly philosophers would surely be mistaken.

I have no faith, therefore, in any deductions about climates, either in the present or the past, based on such slender supports as these, however fashionable they may become, or however sustained by illustrious names. Should it be inquired how the earth was first made, I answer, we have no proof, or even semblance of proof, from philosophy, that it ever was made at all, or that both matter and force, as well as spirit, are not eternal; and if any proof comes, it must come wholly from some other source. That the earth has been changed and refitted or recreated many times, and is undergoing the same constant changes even now, we have the fullest proofs; that it ever was non existent, substantially in its present form, we have no particle of proper proof.

Perhaps these last mentioned changes of the tides, swing, flow and reflow, interlacings, dip, interaction and reaction, and swinging into line again of the great air currents, that are somewhat constant and uniform in their motions, might better be classed with mere ærial than as astronomical causes, though their great motive power is in the sun. There are other ærial changes, or changes of currents, which seem to proceed from mere local causes, either electrical or mechanical, or both combined—such, for example, as the effects of railroads, canals, telegraph wires, burning of forests or cities, cannonading, etc. It can hardly have escaped the notice of men somewhat advanced in life, that the frequency and severity of thunder storms has very materially abated in this country during the past twenty-five or fifty years. It seems also to be well established that the rains on the Great American Desert have very much increased within that period, while the severity of their droughts seem to have increased in California and in regions west of this desert, and perhaps, also, on the regions east of the plains, quite to the Alleghanies. The droughts in France and Western Europe seem also to have increased in severity, while rainless Egypt is again blessed and surprised with an increasing frequency of showers, much as seems to have been the fact when her old canal connected the two seas, as her new one now does. Now, all these changes, or seeming or reported changes, may be only temporary recurrent paroxysms of climate, soon to pass to the other extreme, it is true; but to one who knows the powerful part which electricity plays in the affairs of our earth, and especially in this matter of storms and rainfall, it will not seem impossible that our thousands of miles of railroads and canals and telegraph wires, uniting all the great seas and oceans of the globe as they were never before united, either by water currents or iron rails, or both, and forming quick and ready conductors of electrical currents over the dry and parched summer earth, the whole globe around, and throwing their heavy iron arms abroad, for tens of thousands of miles, in all directions over the continents—I say it will not seem impossible that our canals and railroads should at last be found to be powerful in new distributions of the rainfall, as well as in that of goods and merchandise. It is, at all events, a subject that deserves the close attention of our philosophers and economists. Indeed, I think it hardly possible that so subtile and instantaneous an element as electricity, and other cloud-gathering and distributing forces, should be otherwise than very materially affected by interlacing the whole surface of the earth with such first-rate, continuous and uninterrupted conductors of electricity. I believe that no train of railroad cars was ever known to be struck with lightning, in the history of the world; which in itself shows how easily and surely those iron tracks, in fact, dispose of this erratic and vagrant, but still resistless force.

The burning of forests and the cannonading of armies and cities, seem also to produce marked effects on climate, and especially on the local rainfall. I watched these effects with great interest during our last war; and more usually after a great battle, the papers reported a heavy rain storm as the speedy result. Very soon, last fall, after the seige of Strasburg by the Germans commenced in earnest, the papers reported that the unparalleled drought in that part of France was wholly broken up, the river rose in hight, and even their cellars were filled with water, a state of things wholly unprecedented at that season of the year. So common and almost uniform have these results been in all wars, that it has incited the belief in many minds that drought might be practically broken up and local rainfalls excited by simply firing of cannon, as well as by the burning of forests. And when we reflect that these southwest counter-trade winds, laden with moisture, are almost incessantly passing over our heads, just above the thin strata of the lower surface currents, and gliding in opposite directions in immediate contact with them, and that all that is really wanted at almost any time, to produce rain, is simply to compel these two repellant currents to intermingle with each other, by some mechanical force, or by working some change in their electrical relations to each other, I confess that I am inclined to the opinion that this may not only be practically, but most profitably done; especially when we consider what vast stores of wealth are often dependant on a single rain storm, and how apt are these repellant stratas of air to continue to mingle and pour down their rain, even over wide regions, when their original repellancy is by any cause, at a single point, for once broken up. If Napoleon had determined to burn some small part of his gunpowder in this needful service of mankind, in order to break up the then existing drought of France, instead of trying to use it for the destruction of the political power of Prussia, he might have made his reign memorable and blessed in the history of our race, instead of ignominously terminating it as he did.

Suppose we should fit out a heavy, powerful and oblong French balloon, load it with some suitable fire arms or torpedoes, that could be safely exploded at any desired point in mid air; attach to it a copper electric conducting wire, which also should be attached at the lower end to one of our longest lines of railroad and telegraph wires; amount it loft to the point, or near to the point, where these opposite currents of air and clouds glide over each other, and anchor it there by means of suitable ropes or cords, and at the most proper moment discharge its whole artillery up into that upper strata, thus at one and the same time forcing a commingling of these strata and electrically connecting them both by means of the wire with each other, and with wide areas of land beneath. In view of what we now know, is there any thoughtful and well informed man who really believes that such an experiment, carefully and scientifically conducted, would be likely to entirely fail to break up, or at least make serious inroads into any drought that is likely to occur? And if this is so, why should it not be done? and why should not some of our States, or the general government, prepare to make the experiment for us? If it succeeded, it would save the country untold millions, both from droughts and from necessary excesses and devastations of rains and floods, at other places and times. If the simple lateral concussion of the entirely lower strata of air, in cannonading, produces the effect so generally ascribed to it, what might not be expected from a suitable apparatus thus manned and mounted, and discharged at the very point where its effect is needed? We all know the result of a clap of thunder on a gathering storm cloud; whether it is the cause or the result of the condensation that breeds the well-known rainfall, we are not quite so sure. It may be both a cause and a result, at one and the same time, just as the spark and the instantaneous flame are both the cause and result of the explosion of gunpowder. By means of an endless chain, rope or belt, a continued succession of discharges might be run up and let off through a whole week, if need be. (See Loomis, "Telegraph Wires in Storms," 173.)

Is it asked that I expect that feeble man will learn to control the winds and the waves, the seas and the storms? I answer emphatically yes; for Holy Writ informs us that he was created for this very end, in the image of God himself, for the express purpose that he might gain dominion, masterdom, lordship, over all the earth and every living thing in it, to replenish and subdue it; and we have already grappled in with the steam, the lightnings and the oceans, and taught them to measurably behave themselves, and now is just the time to take hold of the storms and the thunder clouds, and God aiding us, we shall at last succeed, and obediently do what He has already told us to do—to make even "the desert to blossom as the rose." We will obey our Father in Heaven in this as in other things, for He is evermore good to us, and only good.

Another marked phenomena in these different and repellant currents of air is the apparent sudden dip of the upper strata down to some point on the surface of the earth, causing sudden and extraordinary changes of temperatures, especially from warmth to cold, over a region more or less wide. In Texas, and south of this, such dips of the upper current from the north are quite common, and called "northerners"—sometimes suddenly sinking the thermometer some forty or fifty degrees, and bringing with it most destructive frosts and snows, far south of other regions, which may still remain warm and calm. When we reflect that the most intense polar cold forever reigns, both summer and winter, only a very few miles over our heads, we can readily see what must be the effect of the sudden dipping down of some stream or part of this cold upper air, over some spot or area on the earth. But it is not easy to divine the cause that produces these sudden dips; and it is still more wonderful that they do not occur far more frequently than they do. This upper strata, though heavier from cold, is also lighter from relief of pressure, as well as from the fact that it is not so continuously weighted down by absorption of water, from the evaporation of the earth and the waters, so that, on the whole, though colder, it is still lighter than the lower strata of commingled air and water, that floats under a heavier compression near the surface of the earth. Why, then, should this upper current ever descend? or, if at all, why not oftener than it does? Supposed electrical changes are the only answer we can give. And this leads us to further hope to break in upon these strata to produce rainfall, by inducing the needful electrical changes at the proper place and time, in some way as above intimated.

There is another phase of these greater northern and southern upper and lower general air currents, which is particularly interesting to us, as determining to a great extent the prevailing character of our winters, which may be called their *general drift*. Since the entire *moving force* of the great trade winds, or of those winds that move from the pole toward the equator, is in the south toward the sun, the return current is, so to speak, left to get out of the way, or to get back to the north, as best it can, with no specific northern force to attract it thither; it is simply rolled and pushed back by the constant accumulation and piling up of air at the equator, drawn there by the constant power of the sun and its heat. Of course this return current seeks the easiest way back again to the poles which it can find, or elects the path of least resistance, and this will be, of course, over the warmest and dryest parts of the earth, as there the opposing northern current will have least weight and force, and the returning south current will meet there with least resistance. Now, it naturally and almost invariably happens that the greater bulk of the flow from the north goes down south over one continent, while the greater volume of the return current goes up north over some other continent, in some other part of the world; or the one volume may go down south on one side of a continent or high mountain range, and return north on the other side of it. Of course, on the one side, the prevailing winter winds are north and it will be cold, while on the other side or continent their prevailing winds will be from the south return current, and they will have a mild, warm winter. So absolutely inevitable is this, that whenever we read, or hear, or know of an extremely cold winter over one wide reach of longitude, over which the northern winds are flowing southward, we know that we shall hear, and must hear of some parts of the earth or sea, over which this cold current returned again, made warm from the south, and bringing them a winter as genial and warm as that on the other side, or over the other parts, was cold and severe—inasmuch that a cold winter all over the globe, at one and the same time, is an utter impossibility. The present condition of warmth that has prevailed over this continent throughout the fall, as contrasted with the extreme cold reported from around Paris and in Europe, is only one very common illustration of this inevitable law. In countries where the wind-flow from the north predominates, they have now and then warm and hopeful days, with south winds; but after every storm, the wind whisks again round into the northwest, and blows cold enough to take the hair from off a man's head. But where the opposite southern flow, or flow from the south prevails, although they have cold days, or cold weeks it may be, still the storms seem to die away beneath the lull of the south and west winds, and it suddenly turns warm, even when everybody expects it is going to be cold.

Can we now determine the laws and causes of these great and important changes that determine these *general drifts* of our northern and southern air currents, so as to predict the general course of our winter seasons? If we can, it is evidently a matter of great practical moment to our farmers and horticulturists—and I think we can.

We have here in this Mississippi Valley a thousand miles square or more of soil of a very similar and uniform character. It becomes so heated by our hot summer suns as sometimes to absolutely crack down for ten or twelve feet in depth. When so heated, it inevitably operates just as an immense hot iron would do, to heat all the air over it; and so long as it retains that heat, it insures that the return warm currents of air from the south should be over us, on the principle above stated; and it is simply impossible that we should have a cold winter. But so long as this immense mass of soil continues dry, it holds its heat, or parts with it only slowly and with great reluctance, because, when dry, it is an exceedingly bad conductor of heat, but once thoroughly wet through, it becomes a good conductor, and parts with its heat and its power of keeping the air warm almost at once, and the cold northern currents, with their cold winter, are sure to set in over us, while the genial south currents seek their return to the north over some more feasible and genial route, by the same inevitable law of gravity that air enters a heated room by the colder and goes out by the warmer route. All this would happen from the simple force of gravity alone, although it may be that there is an additional direct affinity and attraction between the warm air and the warm lands, just as there seems to be between moist and rain-bearing air and storms, or moist or shaded lands. Given first, then, a thousand miles square of mostly dry lands in this valley, or lands not yet wet through by the fall rains, and a cold winter is clearly impossible; but let this same land once be drenched with water, and therefore part with its heat, and a warm winter is equally impossible. There is one seeming temporary exception to this rule, and I know of only one: sometimes, as has happened this year, the northern current, from some unknown cause, takes a sudden dip down over a region more or less wide, and flares abroad to the far south, whole islands, continents or promontories of snow, covering wholly in the warm earth, and making it, for the time being, wholly ineffectual in warming the air above it, simply because the snow prevents it; and a more or less cold snap will ensue, for the cold northern currents will always roll down over continents of snow, as a matter of course. But the reserved heat beneath will soon expend its force on this alien and unnatural snow, and cold, snow and all will soon be gone, and the genial south breeze return again. But can we know the condition of this wide range of soil, so as to fairly base our predictions upon it, in the fall of the year? I answer, we can. Of course, the actual condition of any single town, or county, or even state, can decide nothing, among causes so wide reaching, with any great certainty. Though here, again, the common people—Germans, English, Irish and Indians—have given us their symbolic signs, true and useful in the main, though, as usual, scouted at by the philosophers, falsely so called. These diverse peoples, who watch the skies and the facts, and not the theories and the books, all say that when the beavers build their dams and houses high it is a sign of a cold winter, and when the husks of the nuts and the corn, and the feathers on the water fowls, etc., are dense and thick, it is a sign of a cold winter, and *vice versa.*

Now, when do these phenomena occur, and what is their real cause? Beavers, of course, build their houses high only where the water is high in the fall in the rivers, showing that the whole country is already covered with water and has parted with its reserved heat, or must soon do so. Everybody knows, too, that our soil, when dry, is one of the most sterile of all soils, so hard and dry and compact that even grass will not grow on it; but when wet and moist, all growths are excessively rapid and heavy. They know equally well that all these husks and shucks of all sorts grow mainly in the last part of the year, and that therefore they are thick and heavy, or light and thin, precisely according as the ground is either wet or dry, or according to those same conditions that determine the great air currents, and the heat or cold of the season for months to come. Everybody knows equally well that the feathers of water fowl will grow thick and close when they can everywhere finds pools and ponds of water to splash and dabble in, near to their feeding places, and that they will grow thin and light when they cannot. That is again exactly balancing with those great universal causes that determine the seasons.

When shall we learn that the Lord, when He made this world, understood His business, and knew what He was about, and everywhere nicely adapted and adjusted one thing to another by the most simple, and still by the most inevitable means? He did not blunder, after all, on the beavers or the water fowls, nor on the corn shucks, nor on the climates, nor on anything else; and the same resistless forces that irsure a hard winter, suitably provide for and insure all things needful against it.

To be sure, the Indian, or the Englishman, or the German, who should reason only from the fowl in his own range or yard, or the shucks in his own field, or the springs and streams in his own county, would reason from a basis altogether too narrow, and be as likely to miss the mark, in many cases, as to hit it.

And this suggests to me our great and urgent need of two special things—a daily or weekly report of the guage-hight of the water in all our large rivers, which would show the general condition of the whole country as regards its wetness or its drought; a daily report of the advance of the snow line along our northern borders in the fall of the year, and especially of the width and reach of those jutting promontories of snow, like the last great storm, thrown down over areas more or less wide, by the apparent dip and sudden commingling of the great air currents overhead. The cost of all this would be but very little, and, if well done, would enable us to so far forecast the coming season as to lay our plans with some degree of intelligence, and save the country millions of money. As it is now, millions of men either rest upon their oars or work with great fear and hesitation after a certain season of the year, because they fear every day that all their plans are liable to be suddenly interrupted and cut short. Give us such items as the above, and give us a good system of storm signals, already inaugurated by the government, for each county, and can it be doubtful that it would save the country untold millions of money, and of lost time, often more valuable than money? Even with such meagre reports as now get into the papers, an intelligent man can, greatly to his advantage, forecast the general character of our coming winters. There really is no more mystery about it than there is about the wind that comes in at the bottom and goes out at the top of the door-crack; and this whole movement of the general drift of these currents depends exactly and inevitably on the same principle. Set a cake of ice or snow over the top door-crack, and the whole motion will be for a time reversed. A very simple apparatus would show this whole thing to the eye of the learner.

The peculiar function of our thunder storms, in breaking up our long droughts, needs some particular notice here. It is often truly remarked that the whole tendency of these greater air currents, before described, are such, in our climate, that when it begins to rain it can never stop, and when it stops raining it can never begin again. This would be literally true, were it not for the swing of the sun from north to south with the seasons, bringing us under continually new conditions and for the action of our local thunder showers, in breaking up our long droughts. When once this spongy soil of the west, with its varied products of trees and herbage, becomes thoroughly drenched and flooded with water, exhaling by myriads of hogsheads every hour from its surfaces of leaves and plants, as well as intensely evaporating from every foot of its hot and spongy surface, the lower surface winds, whose office it is, as feeders, to lick up this watery vapor, and bear it upward to the bosom of those great storm-bearing clouds, that perpetually sail over our heads from the southwest, the surface of the whole country then becomes almost infinitely more productive of the materials for rain than any ocean possibly can be, and what is spilled down on us at one point, one hour, is soon gathered up again, and spilled down at some other point, the next. It seems to rain so easy, that it can almost do it without clouds of any sort; and it does seem as though it never could stop raining. But as the sun advances, this rain-belt swings on to the north of us; and the increasing power of the hot suns, and the dry south and west surface winds lick up again all surplus moisture, and bear it over to the rain-belt already passed to the north of us. And now the reverse condition soon ensues. Nothing is left on the hot, dry surface out of which rain can be made. The heavens and the earth seem changed to iron and brass; clouds, of threatening and portentious look, in the great southwest currents, are soon dissolved into thin and treacherous air again; it tries hard, day after day, but it really seems that it never will, or can, rain again; and so far as these great upper southwestern storm-clouds are concerned, it never could begin again. But right here the entirely new system of our local northwest thunder storms set in, to break up this terrible drought, and prepare new material for again feeding those greater resources of rain and of storm. The excessive heat and drought itself seems to engender these local thunder storms; they gather here and there, before our very eyes, the surface winds at first always blowing toward their centers to feed them, and finally, whirling them off with terrific force and grandeur, to scatter their accumulated rain over acres, or townships, or whole counties, here and there, till thus the whole country becomes sufficiently wet to render the recurrence of the great southwest storms possible again. This usually comes round in September, if not before, when the rain-belt again reaches us in its second swing toward the south. Nothing can be more simple in fact, or more sublime and beneficent than this perpetual action and re-action, this everlasting play and inter-play of these two great complementary systems of southwestern and northwestern storms will be found to be, when once even tolerably understood. I say tolerably, for so many and varied are the forces of electricity, and heat and drought, of evaporation and condensation, perpetually involved, that for ages to come we can hardly hope to fully comprehend their movements, only in the barest outline; the more minute details will perpetually, for the present, baffle and elude us. I cannot forbear remarking, however, that, little as we know how these local thunder storms are produced, which are the necessary natural instruments of breaking up our great droughts, all that we do either know, or rationally surmise, gives us strong encouragement to make trial of artificial means, similar to those I have suggested, for effecting precisely the same result.

We come now to notice some of the effects produced on our climate by the changes in the general surface of the earth itself, such as changes in the average hight of the under-ground water-line, by culture, tramping, herding, drainage or otherwise, from the planting or extermination of forest trees and wind-breaks; of various crops, exhaustive culture, etc., etc. In every consideration of the phenomena of the rain fall, it should be remembered that either a cubic yard of air, or of vacuum, at 50° will hold one-half a cubic inch of water; at 75° Fahrenheit, a whole cubic inch; and at 100°, two cubic inches; that is, air, at 100° will hold four times as much water as air at 50°; and air at 87° is reported by another authority to hold four times as much as air at 32°; so that when either of these two lower and higher temperatures of air are, by any means, commingled, more than half of their common stock of watery vapor is precipitated into a rain fall. Any other mode of cooling down the higher temperatures would obviously have the same effect, whether it be from the cool, moist earth beneath, or from the sudden dip down or wider sweep of the great air currents above, or from the simple tidal waves, commotions and wakes produced by the attraction and inter-action of the sun and moon, referred to under a preceding head. One hundred cubic inches of air weighs about thirty grains, and a cubic foot of water weighs about 1,000 ounces, or 62½ pounds, as reported. From these data interesting deductions might be made, did time and space allow.

It is obvious that in a new and unsettled prairie country, the whole surface of the earth is exceedingly spongy and porous, full of humus, and everywhere shaded, and roughened and clogged, by tufts and tussocks of both fallen and growing grass; so that all water that falls from the clouds, is everywhere held fast, and impeded, and dammed up in little cups, pools, and puddles, in its attempts to run from the soil toward the rivers and the ocean side. The water is thus held upon the soil, until it is either evaporated by the sun, or sinks down into the earth to raise its springs and fountains, and the sum total of its great general underground water level. Hence springs and streams once ran that are now perfectly dry, and wells from which water could be dipped from the top, have settled their water level some ten to twenty feet, and cellars once annually flooded with water are now always dry.

For when the herdsman comes with his herds, these rough prairie surfaces are trodden and smoothed down, and made more compact and solid; the plow and harrow cuts and rakes all down to a dead level; cities are built and roofed and paved; streets are opened and drained and trodden; and ditches, furrows and drains, both above and under ground, over millions of acres, in all possible ways, hurry the falling waters off toward the sea, instead of allowing them to sink quietly and sullenly into the earth to perpetually raise its average under ground water-level.

If it be true that cold, damp soil attracts on the great scale the cold and dense currents of air, while the warm and dry soil attracts the moist currents, the general effects of this culture, and constant sinking of the underground water line, must be apparent, as well in respect to the changes of cold and heat, rain and drouth, as in respect to the nature and growth of the crops, from what has already been said. And the real effects, this generation of men have seen with their own eyes, all over this great valley. They need therefore no further description from me.

We come now to consider the effects of forests and tree culture on climate; and with this general survey before us, we are somewhat prepared, I trust, to estimate it at its true and real value, with no undue or absurd exaggeration of its real importance, amid causes so universal, irresistible, incessant, far-reaching, well-balanced, and eternal. It is of vast importance to us, because, like the drainage and culture, the explosions amid the upper strata of air, by means of balloons and torpedos, and their electric connection with wires to the railroads of the continents; or like the reports of tho river water-guage, or the northern snow-line, or the approach of the southern rain-belt, it is one of the few, the very few means, of practical forecast, or of guidance or control, that we seem to have in our own hands, but shall hardly supersede the laws of gravity, the all-controling power of the great staring sun, the forces of heat and cold, and electricity and magnetism so called, or the consequent sweeps and swings, and tides and whirls, of the great circumambient air and the whirl of the great globe itself, like a cannon ball, shot through infinite space, or its rotations, and rocking, and strains, and agonisms and creakings; its belchings, and earthquakes and volcanoes, as it submits to the iron grasp of these mighty concurrent forces, that evermore handle it with the same ease as a boy spins and lashes his top upon the marble floor; or if you ever become able to dispense with any one or all of these, by any process of culture or art, I would like to call in and hear you lecture on climates.

In every possible economic point of view, however, I consider it wholly impossible that the people of the West should pay too much or too early attention to tree planting; but all work done on a solid and real basis of simple truth, is generally quicker and better done than work incited by extravagant and exaggerated fancies. Let us then find, if we can, the real facts in the case.

That local clouds and rains tend to follow streams and damp, shaded timber-belts, all other things being equal, results inevitably from principles already laid down; that such is the case also in fact, thousands of unsophisticated observers bear witness, in all parts of the country. That the millions of pointed leaves of the forest trees do in fact operate as a sort of electric conductors, performing naturally the same office of changing the electric relations of repellant air-currents, and causing them to commingle, and give up their latent rain, on the same principle that I propose to produce the same effect, by a conducting wire attached to a balloon, or otherwise elevated, there can be scarce a doubt.

That such trees shade the earth and keep the underground waterline in summer much higher than it would be if they were swept off; that on the other hand they arrest the sweep of the cold winds, and especially if evergreen, blanket over, so to speak, the earth in winter, and cause it to radiate, or part with its accumulated summer heat, much more slowly than the naked fieds do, admits of no doubt at all. So far, then, the effects of forests are and must be very great over any given locality.

But there is another point, not so commonly considered. I refer to the vast amount of water that a forest itself daily draws up and pumps out, or throws off into the air. According to Haler, the grape vine throws off about one-half ounce of water to every square foot of surface, every twenty-four hours; the apple tree and the sunflower exhale or throw off nearly a full ounce, in the same time, to the same surface; and other trees and plants still more than these. It is also estimated that a large tree contains from four to six acres of natural foliage, while a moderate sized tree would afford one acre of foliage; if, then, there were only forty such trees to the acre, each acre would pump up into the air, every twenty-four hours, two thousand five hundred barrels of water of fourty gallons each. I say pump up, because such is the fact; all this immense quantity of water is not simply evaporated from the surface by the power of heat, but it is actually pumped up, from the depth of the earth beneath, by the force of those myriads of little vegetable cells, of which all trees are composed, passing from cell to cell by a principle called endosmose and exdosmose attraction, not wholly unlike the interaction of pump valves, only vastly more simple, curious and effective, and when each drop of this water has performed its office of bearing in solution its portion of solid matter to the leaves or stems of the tree, it is thrown out into the air, as of no more use to that plant or tree. Is it possible that such an operation should go on incessantly, night and day, over large areas of land, without furnishing to surrounding fields a large increase of those material, out of which the dews, the rains and the thunder showers are made? We well know that it is not. It is true that other vegetable products proportionally exhale water in the same way; but that from a grass or grain field is comparatively small, and active only in the early part of the season; that from a corn field is much larger, and more continuous; hence a corn field is well nigh able, if kept in vigorous growth, so to speak, to pump its own water; to throw up enough by day to make is own dew by night, if the lazy plowman will but keep his plows running, so that the loose soil can drink up again what actually falls down upon it. But none of these compare, in the amount of their exhaled water, with a forest or a timber-belt, nor in the depth below the earth, from which they are able to draw up their watery supplies.

With such plain facts as these before us, how can we well over-estimate the beneficent effects of forests, groves and timber-belts, in moderating the extremes of heat and cold, of floods and droughts, aside from all their profit, and beauty and comfort, to man and beast, wherever they are judiciously applied? I am most profoundly convinced that it is possible to double the real value of every acre of land in Illinois, within twenty years, by a judicious and universal system of tree planting alone.

I have thus, my friends, given you as best I could a sort of a naked and bare-boned skeleton view of this beautifully sublime and sublimely beautiful subject of climatology.

Whatever young man of you ever arrives at even a tolerable understanding of this one simple science of the agriculturist—only this one, among the multitude, so nearly and intimately connected with most beautiful and interesting of all professions, and of all arts—will derive therefrom more solid and ennobling knowledge, more true culture, more real discipline of the highest and best powers of the human mind; more true power of practical analysis and reason; more that in all regards, elevates, and blesses, and adorns, and inspires human souls and human beings, than all the old Greeks and Latins ever knew, or the joint knowledge of all their peculiar literatures can ever afford. Still, I would by no means depreciate or interdict the study of the classics, wherever those studies are either apposite or appropriate. But I would say to all their devotees, as the Saviour of men said to the Jewish conservatives of old, "These things ought ye to have done, but not have left the other undone."

LECTURE ON INSECTS.

BY WILLIAM LE BARON, M. D., STATE ENTOMOLOGIST.

Insects constitute the most numerous class of the third primary division of the animal kingdom, designated by the name Articulata. They are so called because their bodies and limbs are divided into many segments, united by a corresponding number of joints or articulations. Two of the other great divisions, the Mollusca and the Radiata, of which the oyster and the star fish may be taken as respective examples, are soft-bodied animals which are usually enclosed in a shell, and which exhibit scarcely any trace of proper articulations.

The primary division of the animal kingdom or the Vertebrata have parts, it is true, to which the segments of the Articulata are, for the most part, analogous, but they are less distinct and less visible externally, so that the term Articulata happily expresses the most prominent characteristic of this class of animals.

The name insect, derived from two Latin words meaning cut in two, is founded upon the same peculiarity; and *entoma*, the Greek word for insect, from which our word entomology is derived, means precisely the same thing.

Let us see for a moment how extensively this idea of segmentation is carried out.

In the first place, the body of an insect presents three principal divisions, usually separated from each other by deep incisions. They are called the Head, the Thorax, and the Abdomen. The head is attached to the thorax by a narrow neck, and the abdomen is often joined to the thorax by a narrow footstalk called the peduncle. This peduncle is sometimes so short that it is not externally visible, and in some whole orders of insects the abdomen is joined to the thorax by the greater part of its breadth, in which case it is said to be sessile.

If we examine the thorax critically, we find that it is composed of three parts closely consolidated, but usually distinguishable by superficial or slightly incised lines. These parts are called the prothorax, the mesothorax and the metathorax. Each of these three segments is furnished on the underside with a pair of legs, so that all insects are hexapods, or six legged animals. Those creatures, therefore, which have more than six legs, like the spiders which have eight, or the millipedes, which sometimes have more than a hundred, though they are generally called insects, are not regarded as strictly belonging to this class. To the thorax also are attached the wings or organs of flight, the front pair being attached to the mesothorax, and the hind pair, when they exist, to the metathorax.

The abdomen consists of a number of segments in the form of rings, more or less movable on each other, each ring usually overlapping a little that which is next behind it. The number of abdominal segments varies somewhat in different families of insects. In the larva or caterpillar state, in which the annulose structure is more simple, the body is divided into 12 rings, besides the head. As the thorax in the winged or perfect insects, exhibits three segments, it follows that in order to make up the number 12, the normal number of abdominal rings must be supposed to be nine; and in the male earwigs (Forficulidæ) this number is actually found to exist, though the usual number is not over six or seven. The number of joints in the antennæ or horns of insects is very variable. In the large order of Coleoptera or beetles, the number is, with very few exceptions, eleven; and this may be taken as not far from the average number in the class of insects—some orders as the Orthoptera, Neuroptera, Lepidoptera, and the majority of the Hymenoptera, having more than eleven, whereas the Hemiptera, Homoptera, a part of the Hymenoptera, and the greater part of the extensive order of Diptera, have less than eleven. The mouths of insects, as a general rule, are composed of an upper and lower lip, a pair of upper and lower jaws, and two pairs of palpi or feelers, which are short articulated appendages, consisting usually of three and four joints respectively, or 14 joints in all four of them. The legs of insects, without including the generally immovable hip joint, are composed of the thigh, the leg, and the tarsus or foot, which is usually 5-jointed, making seven pieces in each leg, or 42 in all the legs combined.

In counting up the number of distinct pieces of which an insect is composed, therefore, we may reckon 13 segments for the head and body, 22 for the antennæ, parts of the mouth, 20; wings, 4, and legs 42; making in all 101 joints or pieces; and in the insects with many-jointed antennæ, this number would, of course, be considerably increased. In round numbers, therefore, we may say that an insect is composed of about one hundred distinct pieces or segments—connected together by movable joints.

I have run through this calculation to show the remarkable appropriateness of the term Articulata, meaning many-jointed, for the animals of this class; but I should not have taken up so much time for this purpose, had it not given me an opportunity, at the same time, to give you a brief sketch of the component parts and external organs of insects.

Of the number of actually existing species of insects it would be impossible to make an accurate estimate, and almost as difficult to form an adequate conception.

In 1854 Lacordaire estimated the number of species of Coleoptera, or beetles alone, to be 80,000 actually known to exist, and it would be safe at the present day to put the number at 100,000; and this is only one of eight orders; three others, of which the Hymenoptera, or wasp-like order, the Lepidoptera, or butterfly and moth order, and the Diptera, or two-winged order, are not much inferior in number of species to the beetles. The number of species of insects actually known, or reasonably supposed to exist, cannot, therefore, fall short of 500,000, or half a million. The number of species already found in the United States is upwards of 30,000.

Now, in contemplating such a vast variety of insect forms, we should become absolutely bewildered, if it were not for the incalculable aid we derive by applying to them the well-known and established principles of classification.

It is found that this almost countless host of insects can all be reduced into seven or eight large groups designated by the name of orders. Where these orders approach or run into each other, certain intermediate or osculant forms are found to exist which can sometimes be classed with one of the adjacent orders about as well as the other, and in other cases we cannot very satisfactorily include them in either. This has led some classifiers to elevate these intermediate groups to the rank of orders. But it is very questionable whether either scientific or practical entomology has gained by this step. The English entomologists have generally adopted this more numerous subdivision.

Mr. Stevens, in his catalogue of British insects, divides them into fourteen orders, and Mr. Westwood, in his modern classification of insects, admits thirteen. Linnæus, the great founder of classification and nomenclature, included all winged insects in six orders but he, of course, had much fewer species to deal with than we now have.

The great French author, P. H. Latralle, who has been styled the prince of modern entomologists, preferred the more simple and comprehensive classification, and admitted but eight orders in the class of insects, and my personal friend and preceptor in entomology, Dr. Thaddeus Wm. Harris, of Cambridge, Massachusetts, who was certainly second to no entomologist that America has produced, in his well-known treatise on noxious insects, comprises them all in seven orders, excluding the Neuroptera from the list of orders containing noxious species.

The great advantages derived from classification depend upon the principle that all natural objects constituting a natural division, whether it be a class, an order, a family, or a genus, have certain characters in common, so that if we know the characters of one of its constituent species we know to a certain extent the characters of all.

If you show to an experienced entomologist, for example, an insect which he never saw or heard of before, he will, in most instances, tell you, at a glance, a great part of its history.

We cannot therefore familiarize ourselves too much with the characters of natural groups, beginning with the few primary divisions, and descending, as we may have time and opportunity, to those of inferior rank.

We repeat, then, that all the countless hosts of insects, collected from all parts of the globe, and which people the earth, the air, and the water, can be arranged under seven great divisions, which are designated by the name of orders. These orders are as follows: The Coleoptera, or beetles; the Orthoptera, composed chiefly of the grasshoppers; the Hemiptera, or bugs, properly so-called; the Neuroptera, including the dragon-flies and the Ephemeræ, or May-flies, the Hymenoptera, or wasps and bees; the Lepidoptera, or butterflies and moths; and the Diptera, or two-winged flies.

I wish to dwell for a few moments upon the meaning and extent, and force of these few great primary divisions of insects. And I beg you, my friends, to divest your minds of the idea that, in so doing, I am dealing in technicalities, or scientific abstractions. Far from it. These orders are, to entomology, what the continents are to the geographer, or the four cardinal rules of arithmetic are to the mathematician.

They are seven arches on which rests a stupendous superstructure. They embrace the seven primary ideas or principles which enable us to take the world of insects, as it were, in our grasp, and bring within the scope of our comprehension half a million of diverse forms.

They are the keys to the seven inclosures in which we may suppose all insects, whether noxious or otherwise, to be contained, and which we must possess ourselves of if we would become acquainted with their appearance, their characters or their habits.

It will be observed that the names of the orders of insects (Coleoptera, Lepidoptera, etc.,) all have the termination *ptera.* This is the plural of the Greek word πτερον, meaning a wing. The primary divisions of insects, therefore, are founded upon the diversities in their wings; and the wings of insects being their largest and most conspicuous organs, we are able to apply the principle of classification thus happily selected, at a glance, and without any minute and laborious examination. This mode of classifying insects was suggested and commenced by Aristotle, and almost perfected by Linnæus.

J. C. Fabricus, a learned German entomologist, subsequently divided winged insects into eight primary groups, founded upon differences in the parts of the mouth, arguing that the organs used in seizing and masticating food, are of more importance in the animal economy than the organs of locomotion. However philosophical this view might, at first sight, appear, it was found not to lead to satisfactory results. In other words it was a step backwards in the history of entomology. This system has, long since, been abandoned, all modern authors having adopted the simpler and clearer classification of the great masters. The term *Coleoptera* is compounded from two Greek words κολεος a sheath or case, and πτερα wings. It embraces the great order of beetles, which are distinguished from other insects by having their wings inclosed and protected under horny sheaths or wing-cases, designated in scientific language by the word *elytra.* Most insects have four membranous wings. The beetles have but two. The elytra represent and take the place of the anterior pair. They are not used in flight, but are held erect and motionless so as not to obstruct the motion of the true wings. The wings are much larger than the elytra, and in order to be covered by them require to be folded two ways, that is both longitudinally and transversely. The beetles are, as might be supposed, comparatively poor flyers. Some of them have no wings under their cases. Many which have wings seldom or never use them; and many others, like the curculios and the leaf-beetles, or Chrysomelidæ, when alarmed do not attempt to escape by flying, nor by running, but by contracting their legs and wings close to their bodies and dropping to the ground, usually amongst dead leaves or grass, where it is often impossible to find them. It was to take advantage of this singular habit that the contrivance known as Curculio-catcher was constructed.

The Coleoptera are the most numerous, the most diversified, and the most generally collected and studied of all the orders of insects. They are the most easily captured, and preserved, of all insects, and therefore always constitute a large proportion of every general collection or catalogue. From this it undoubtedly follows that their numerical importance, as compared with some of the other large orders, such as the Hymenoptera and Lepidoptera, is considerably over-rated. Nevertheless, I think it will generally be admitted to take the precedence in this respect.

It is also the most numerous and diversified in noxious species, no other order approaching it in this respect, except the Lepidoptera. It contains the extensive and destructive family of Curculionidæ or snout-beetles, the Chrysomelidæ, or leaf-beetles, he Melolonthidæ, or leaf-chaffers, the Cantharides, or blister-beetles, and all the extensive tribes of wood-borers, except a very small proportion of the larvæ of the Lepidoptera.

The second order of insects is the Orthoptera. This name is also composed of two Greek words ορθος (straight) and πτερα (wings). They are so called because the inferior or true wings are folded only lengthwise, like a fan. It includes the grasshoppers, crickets, cockroaches, and a few other families. These insects also have the wings covered by a case, analogus to the elytrum of the Coleoptera, but it is different in form and consistency, being longer, straighter and more flexible, resembling in texture, parchment more than horn. The wing-covers of the Orthoptera are called *tegmina*, to distinguish them from the elytra of the Coleoptera; unlike the elytra, they are, by some species at least, used in flight. Under these tegmina the wings, as I have said, are folded straight or lengthwise, whilst under the shorter cases of the Coleoptera they require to be folded also crosswise. In this connection I have a great mind to tell you a little anecdote of my own early stuies in entomology, as furnishing a pretty good illustration of the difficulties which often beset the path of the juvenile student. When, as a boy, I began to be interested in the study of insects, some 40 years ago, nothing had been published upon this subject in this country, except some of the descriptions of Mr. Say, scattered in several periodicals, and some of the earlier writings of Dr. Harris, and a few others. No elementary work had been attempted here, and the only work imported from Europe was a few copies of the first edition of Kirby & Spence's Introduction, in four octavo volumes, a work of great value but still greater rarity, and which, at any rate, would have been beyond the reach of my pecuniary means. We had in our home library, however, that vast compendium of knowledge, and father of dictionaries, known as Rees' Cyclopedia, in about forty large quarto volumes, which some of my hearers may possibly be old enough to have seen. In this work was an article of considerable length on the subject of insects, defining the orders and some of the leading genera under each. With this cumbersome and imperfect guide, I launched out upon the boundless ocean of entomology. I was as ignorant of the subject scientifically as a babe unborn, and did not know one order from another. One of the first insects which I captured and attempted to analyze, was a pretty copper-colored beetle, three-fourths of an inch in length, which I have since learned to be the Dicerca Divaricata, belonging to the family of Buprestidæ; the same family which contains the flat headed borer of the apple tree, and the larva of this species is injurious in the same way to the cherry and the peach tree. My first object was to determine to what order my specimen belonged. So opening my big compendium, I found that the order Coleoptera contained all those insects which have their wings folded both lengthwise and crosswise under their cases, and the Orthoptera embraced those which have their wings folded only lengthwise under their cases. Upon raising the wing covers of my specimen and examining the wings, I found them to be folded lengthwise only. It must therefore belong to the order of Orthoptera. The next thing was to find to what genus it belonged. But after trying it in all manner of ways, I could not make it fit any of the described genera. After puzzling over it till I was tired, I threw it aside in despair—or in disgust, I cannot tell now which. Many years afterwards, when I came to know more about insects, I learned that this family of Buprestidæ is the only one in the whole order of Coleoptera which has the wings folded straight like the Orthoptera. I had at the very outset run against one of those exceptional cases with which nature seems to delight to qualify her generalizations, lest, perhaps, we should fathom her secrets too easily.

I pass on to the third great division of insects, the Hemiptera. This term is derived from the Greek ημιδυ, *half* and πτρεα, *wings.* They are the half-winged or more properly the half-and-half winged insects, because the basal half of their wing-cases is thick like parchment, and the terminal half, thin and membranous. This is the order of *bugs*, strictly so called. They do not have gnawing teeth like the two former orders, but a kind of beak or sucker through which they imbibe liquid nutriment. It includes the brown squash-bug, the chinch-bug, and the bed-bug. Most of the insects of this order have a fetid odor, similar to that of the three species which I have just mentioned. This order contains but few noxious species, but most of these are of a very serious character. It is divided into two strongly marked sections, in one of which the wing-cases do not present the contrasted character above described. Most modern authors consider this section entitled to the rank of a distinct order, to which they have given the name Homoptera, meaning wings of the same consistency throughout. This section contains the Aphides and the Bark lice.

The next order is that of the Neuroptera, a term compounded of νευρον, a *nerve* or *sinew*, and πτερα, *wings*, so called because the four wings are composed of a thin membrane spread over a complicated network of nerves or veins, a structure with which you are all familiar in the wings of the dragon flies or devil's needles, which constitute a leading family in the order. This is the great aquatic order of insects, and is considered as holding the same place in the circle of insects that fishes hold in the circle of the vertebrata, and that ducks and geese hold in the circle of birds. It is not, however, exclusively aquatic, but more than half of the families which compose it are aquatic in their larva state, and the perfect insects are usually seen in the neighborhood of ponds and water courses. This order is remarkable for not containing a single species injurious to the farmer or horticulturist. Most of the species are carnivorous, and some of them are useful by aiding us in keeping noxious insects in check. The dragon flies are the hawks of the insect tribes, and prey largely upon other insects. The order also contains the famous little lace-winged flies, which are one of our most efficient aids in the destruction of the Aphides or plant-lice.

The fifth order of insects in this arrangement, is that of the Hymenoptera, a word derived from *humen* a membrane, and *ptera* wings, and so called because the wings are composed of a thin transparent membrane or skin, without cases, and with comparatively few veins. This is the order of the wasps and bees, or rather of wasp-like and bee-like insects.

It is one of the most exclusive orders, being usually ranked in this respect next to the Coleoptera. It holds a very peculiar relation to human interests. It contains a few noxious species, mostly confined to one family, that of the saw-flies. This family contains the rose-slug, the pear-slug, and the destructive saw-flies of the currant bush, the elm, and the pine.

But the great importance of the Hymenopterous order lies in the fact that it contains the great majority of those small but numberless parasitic insects, which perform so important a part in maintaining the balance between the world of insects and that of plants, and which, more than all other agencies combined, serve to check the excessive multiplication of noxious insects.

There is but one family of insects, outside of the order of Hymenoptera, that contains any considerable number of parasitic species,* and that is the family of the Tachinidæ in the order of Diptera. With the exception of this one family, nearly all the hosts of parasitic insects belong to three families of the Hymenoptera, namely, the Ichneumon flies, the Chalcis flies, and the Proctotrupidæ. Of these the Ichneumon flies are the largest, but they probably do not average more than one quarter of an inch in length, and the species of the other two families do not average one-tenth of an inch. Of the numbers of these insects we can form no conception. In the British Islands alone, where much attention has been given to these minute insects by entomologists, 265 genera have been recognized and described. Some of these genera contain upward of a hundred distinct species, and the number of individuals appertaining to many of these species could only be enumerated by hundreds of millions. These innumerable and almost infinitessimal insects perform an all-important and indeed indispensable part in the economy of nature. To their instrumentality it is now well known we owe our deliverance from some of the most destructive insects. It is moreover an interesting thought that these minute creatures ply their busy avocations wholly irrespective of our co-operation and in spite of our opposition. Man, by the wanton destruction of the insectivorous birds, can temporarily disturb the harmony of nature, can create a slight eddy or backwater, so to speak, in the onward flow of a beneficent providence, and might, indeed, in his ignorance or his perversity, inflict irremediable injury upon his own interests, were he not saved, in spite of himself, by the all-pervading and uncontrollable instrumentality of the parasitic Hymenoptera.

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* The Dipterous families of Conopsidæ and a part at least of the Mydasidæ, and probably all the species of the anomalous order of Strepsiptera, are parasitic.

The Hymenopterous order is also remarkable for the social habits and wonderful instincts of some of its species, which is strikingly illustrated by the well known histories of the ants and the bees.

The next order of insects which we are to consider is that of the Lepidoptera. This term is derived from υμην a *scale*, and πτερα *wings*. These insects are so called because their wings are covered and ornamented with minute scales, overlapping each other like shingles, appearing to the naked eye like the finest dust, but giving to the wings a peculiarly soft and beautiful surface.

This is the order of the butterflies and moths. It is an order of great extent, being about equal in the number of genera and species to the Hymenoptera, and is equally remarkable for the beauty and attractiveness of the winged insects, and the voracity and destructiveness of their larvæ, commonly known by the name of caterpillars. These, with one or two rare and abnormal exceptions, are all vegetable feeders, subsisting mostly upon the leaves of plants, but also in some instances upon the fruit. It contains the tent-caterpillar, the army-worm, the codling-moth, the canker-worm, the clothes-moth, and many other destructive species too numerous to mention. Next to the Coleoptera it contains by far the most destructive species, both to the products of the farmer and the horticulturist, and it is questionable whether it does not even exceed that order.

The seventh and last order of insects, in this enumeration, is that of the Diptera, a word derived from the Greek δις, *double*, or of *two parts*, and πτερα, *wings*, so called because these are the only insects, with a few anomalous exceptions, (Coccidæ and a part of the Ephemeridæ) which have but two wings. All other insects have either four wings, or two wings and two cases, which represent the other pair. This order contains the gnats and mosquitoes, the horse-flies, the bot-flies, and the house-flies, and though it is inferior to some of the other orders in the number of its families and genera, it is by no means certain that it does not surpass them all in the number of its individuals. It contains comparatively few species injurious to the agriculturist, but a portion of these are of the most destructive character, the most notorious of which are the Hessian-fly and the wheat-midge. It also contains, as we have before stated, the extensive family of the parasitic Tachinidæ.

Having taken this general survey of the leading divisions or orders of insects, let us look at them a few moments collectively, and see if we can arrive at any further generalizations which will be interesting or useful.

We may classify insects, like other natural objects, in different ways, according to the point of view from which we observe them. Thus we might divide insects, as we do birds, into land insects and water insects, and we might subdivide the former into those which live in or upon the ground, those which burrow into trees, and those which spend much of the time on the wing. Or we might divide them as we do quadrupeds, into the carnivorous and the herbivorous kinds. Or, again we might make their metamorphoses the leading principle, and divide insects into those which retain essentially the same form and are active in all their stages, and those which become inactive in the pupa state, and undergo a more complete transformation. And every such classification would have a certain advantage over any other, inasmuch as it would present certain important characters in a strongly contrasted light. But they are not always practicable nor philosophical, because they group animals together which, though they agree in one important respect, differ too much from each other in other important characters.

There is another division of insects, however, to which I wish to call your attention, which is so interesting and of so much practical importance that it has been actually adopted and put in practice by some entomologists of acknowledged rank, though not by all. This is the division into the mandibulate and the haustellate insects. By mandibulate is meant those insects which have mandibles, or teeth for gnawing. They are sometimes designated as the biting insects. By haustellate insects are understood those which have a proboscis or sucker, through which they imbibe liquid food. This, I have said, is an important practical distinction, for the reason that those repulsive substances which we apply to the leaves and other parts of plants, such as ashes, lime or soap, and even poisonous applications, like the hellebore and Paris green, whilst they prove obnoxious or fatal to the gnawing insects, have little or no effect upon the sucking insects, because these last, by inserting their proboces into the substance of the plant, imbibe their nutriment from the inner tissues, which our outward applications do not reach.

I have tried sprinkling the most poisonous substance which we have ever used for killing insects—namely, the Paris green—upon leaves infested with, perhaps, the tenderest of all insects, but belonging to the haustellate or suctorial division; I refer to the Aphides or leaf-lice. And though so strong an application seemed to damage some of them, yet there was none of that direct and wide spread fatality, which follows its application to the coarse potato-beetles, and other gnawing insects, which, in eating the foliage, also actually swallow particles of the poisonous substance.

For the reason here stated, it is evident that the haustellate insects must be the most difficult to deal with, of all our insect foes, and such, in proportion to their numbers, is, in point of fact, the case.

Let us now take a look at the several orders of insects which have just been delineated, and see how they stand affected with regard to this important principle of classification:

If, in accordance with the practice of most modern entomologists, we divide the Hemipterous order into two, namely, the Hemiptera proper, or as they are now usually called, the Heteroptera, and the Homoptera—making eight in all—we shall find that the orders of insects are equally divided between the mandibulata and the haustellata. In the former section, the mandibulata, we find the Coleoptera, the Orthoptera, the Neuroptera, and the Hymenoptera. In the haustellate division, are the Hemiptera, the Homoptera, the Lepidoptera, and the Diptera.

If now we inquire how we stand affected in our economic interests, to these two classes of insects, we shall find that though some of our worst insect enemies, and the most difficult to be overcome, are found amongst the haustellata, yet, by far the greater proportion of damage which we suffer from insects, is effected by the mandibulata—for the simple reason that they are very much the more numerous. Three of the haustellate or suctorial orders, the Hemiptera, the Homoptera, and the Diptera, have comparatively few noxious species, though, as we have just said, some of these are of the most serious character; and the other, the great order of Lepidoptera, is utterly harmless in the perfect state. Some are very short-lived, some take no food, but only propagate the species and then perish, and the others subsist upon the nectar of flowers. I say the Lepidoptera are harmless in their perfect or winged state; and this brings before us the remarkable fact that some insects, of which the Lepidopterous order furnishes the most striking examples, are haustellate in their perfect state, but mandibulate in their larval condition; and whilst the suctorial butterflies and moths not only inflict no injury upon us, but adorn our fields and gardens with their beauty and animation, their mandibulated larvæ, the caterpillars, are our most voracious and destructive enemies.

The suctorial order of Diptera, also, are mandibulate in the larva state. But as these soft grubs, commonly known as maggots, usually subsist upon decaying animal and vegetable matter in a semi-liquid state, they can hardly require to use their mandibles—which are always small and imperfect—for the purpose of gnawing, but more probably, only, for breaking down the soft tissues by which they are surrounded. The fluid nutriment must be imbibed by them, directly through the mouth-aperture, without the intervention of a proper suctorial organ. The mouths of the larvæ of the Diptera, therefore, would seem to be of a sort of intermediate character between that of the proper mandibulate and haustellate insects.

In a strict classification of insects according to their manner of taking their food, we should have to make a qualification, also, in the case of the bees and other Hymenoptera, which live upon honey or other liquid food, and which, though possessed of mandibles, are known to take their food, as was long ago observed by Kirby and Spence, by an operation similar to lapping.

The consideration of the supposed suctorial power of many insects leads to a curious question in insect physiology, which it may not be uninteresting to turn your attention to for a few moments, more especially, as I presume that I have some juvenile philosophers in my audience at the Champaign Universty. A butterfly or sphinx moth extracting honey from the bottom of a deep tubular flower, by means of its long tongue or proboscis, suggests at once the simple idea of sucking a liquid through a tube, just as, in old times, we used to suck cider through a straw. Of course, the boys of the present day do not indulge in any such immoral practices. This operation is effected, you know, by the pressure of the atmosphere forcing the liquid up the tube to fill the vacuum produced by the voluntary exhaustion of the air in the cavity of the mouth. But insects do not breathe through the mouth as we do; and they have no oral cavity in which to produce a vacuum. Whether the result be effected by the successive contraction of the parts, similar to the contraction of the esophagus in the act of swallowing; or whether there be a genuine suction effected through the whole length of the proboscis, instead of any special cavity, I am unable to say, and I have never seen the nature of the operation satisfactorily explained.

If there are any young Newtons or Faradays in the Industrial University, I hope they will, one day, enlighten the world upon this subject.

I have adverted above to the very serious character of some of the noxious insects of the suctorial division, and to the difficulty of counteracting their injuries. With the view of giving a practical conclusion to my discourse.. I will briefly refer to a few of the most notorious of them.

As we have seen that the extensive order of Lepidoptera must be excluded from the class of noxious insects in their perfect and haustellate condition, we must seek our examples from the other three suctorial orders, the Hemiptera, the Homoptera and the Diptera. Fortunately the number of noxious species in these orders is comparatively small. The chinch-bug, in the order of Hemiptera, and the bark-lice, in that of the Homoptera, are perhaps the only ones in this division which are entitled to the rank of first-class noxious insects, though a number of others, such as the *Capsus linearis*, or Tarnish-bug, the Aphides, or leaf-lice, and several species of Tettigoniæ, especially the *Tettigonia vitis*, or leaf hopper of the vine, may be regarded by many as having a just claim to this bad pre-eminence. The Hessian-fly and the wheat-midge, in the Dipterous order, are noxious insects of the most serious character, but they do their damage in their larval and mandibulated state, and therefore do not strictly come within the present category. But the mosquitoes and horse-flies, which are so excessively annoying to man and beast, are genuine examples of noxious insects the haustellate division. The notorious chinch-bug, though a repulsive insect, both from its destructive habit and fetid odor, is nevertheless interesting in one respect, at least, inasmuch as its history furnishes the most remarkable example on record of the efficacy of meteoric or climatic influences in exterminating noxious insects. The chinch-bug delights in hot, dry weather. Even a moderate degree of moisture seems to be repugnant to them, for it has often been noticed in localities where they have prevailed, that in cases where a wheat field embraced a portion of both high and low ground, the insects would be very destructive on the high and dry portions, while few or none of them could be found in the moister low lands. From this we might naturally infer, what is actually found to be the case, that the excessive moisture caused by frequent rains would be fatal to them.

In accordance with this view the excessively rainy season of 1869, embracing, as it did, the whole month of June, which is chiefly both the feeding and the propagating season of the chinch-bug, almost exterminated this destructive insect from the State of Illinois.

The almost unprecedentedly hot and dry summer of 1870 would have made the wheat-growing State of Illinois the chinch-bug's paradise, had it not been that there were not enough of them left over from the preceding unfavorable year to propagate the race to any considerable extent.

But though greatly reduced in numbers we must not suppose that they were wholly exterminated. Nature indeed does not easily permit her species to be lost. Individuals perish and their wrecks strew the earth, or moulder beneath its surface; but not without many throes and many resuscitations does nature permit a species to become extinct. Nor does she seem to make any discrimination with respect to rank or character, but saves from extinction the fragile wheat-midge and the nauseous chinch-bug, as well as the gigantic elephant-beetle, and the gorgeous butterfly; just as the human mother guards and cherishes, not her beautiful and hopeful children alone, but throws around her most deformed and sickly progeny the protecting ægis of her imperishable affection.

I repeat, then, that the chinch-bug still lives, and though, for the reason stated, they have not been sufficiently abundant to do much damage the past season, yet there is reason to believe that there have been enough of them under the favorable influences of the season to plant their colonies pretty extensively for another raid upon us in the summer next to come. Complaints have come to me from different parts of the State, especially in the more central portions, of their being found in considerable abundance; and several gentlemen, with whom I conversed at the recent annual meeting of the State Horticultural Society, gave their testimony to the same effect; and I have myself seen them in considerable numbers, in my own county of Kane, apparently secreting themselves for winter under the husks and sheaths of corn-stalks. I think, therefore, that in some localities, how many I cannot say, there is reason for the gravest apprehension with respect to the spring wheat crop of the coming year. In view of this prospect for one of his most important products, the farmer may be said to be somewhat in the condition of the mariner on the swelling tide, who sees the flashes of lightning in the horizon, and hears the muttering of the distant storm; and almost as helpless as the mariner when the storm has burst upon him, is the farmer when the countless hosts of chinch-bugs have once made their onslaught upon his fields. But in this, as in many other cases, though we may not be able to stem the tide, we can, at least, furl our sails and to some extent elude the storm.

In the first place, it will evidently be the part of wisdom, in those localities where the chinch-bug has been seen in considerable numbers, the last fall, to sow more sparingly of spring wheat the next year, than might otherwise be done.

In the second place, the most important precautionary measure we can take is to get the seed into the ground as early as possible. It is not the chinch-bugs which winter over that do the harm, but their countless progeny, which do not usually make their appearance till near the middle of June. If we can get our crop pretty well matured previous to that time, we shall in a great measure escape the effects of their ravages. For this reason the winter-wheat crop is rarely much injured by them.

It is also a good precaution to burn up the old corn-stalks or other litter that lie about the fields and fences, where the bugs have been seen, and in the shelter of which many of them are known to pass the winter. This is best done late in the fall, as this kind of rubbish is, in most seasons, made too wet to burn, by the snows of winter and the rains of the early spring.

If, however, through ignorance or shiftlessness or the unfavorable character of the season, the wheat should be got in late in the spring, and the month of June should come off hot and dry, and if the chinch-bugs should have the impudence to believe that the good things of this world were made for them as much as tor their more pretentious fellow creatures who, however, are only furnished with two legs instead of six, and if they should come to visit you, and should bring all their relations with them, and should come to stay,—then what?

Why then, my friends, I am very much afraid that your case will be beyond the reach of the State Entomologist. But as it is said that as long as there is life there is hope, and as the faithful physician does not desert his patient so long as the vital spark remains, so perhaps you will expect me to give you some consolation, even in this desperate extremity. Various methods have been suggested and put in practice to meet such an emengency as this. As chinch bugs seldom or never attack a whole wheat field at once, but commence their depredations in spots upon the highest and dryest parts of the field, the idea has naturally occurred that if we should cut down the wheat on these patches, let it lie a few hours to dry, and then rake it together, and burn it, we might destroy a large part of the insects. I cannot learn that this experiment has ever been attended with much success, and for two obvious reasons: first, because this operation does not reach the eggs and young insects which infest the roots, and secondly, because in cutting the wheat you will necessarily knock a great part of the insects onto the ground, and they will be just as likely to run into the [illegible] rounding grain, as into the straw which you are preparing for their funeral pyre.

The favorite food of the chinch-bug is spring wheat. It is not probable that this insect would ever multiply to any great extent if spring wheat were not cultivated. But having commenced and raised their first brood upon the wheat, they do not hesitate to attack barley, if it is within their reach, and they seem to flourish well upon it. Oats they will not eat until driven to it by absolute necessity. The rye raised in this part of the country being mostly winter rye, is, like the winter wheat, too early advanced in the spring to be much injured by them. After the small grains have been devoured by them, or have become too much matured to afford them nutriment—for it must be born in mind that we are now treating of an insect of the haustellate division, which does not devour the substance of the plant, but only imbibes its juices—it is well known that they pass on to the Indian corn, and find in its succulent stalks an abundance of sweet and congenial food. But by the time that this takes place, this magnificent plant has usually made such a luxuriant growth, that it does not easily succumb to their attacks, and generally only a few of the outer rows are seriously injured by them. But there have been times and places when whole fields of corn have been laid waste by the countless hordes of this prolific and destructive insect. In view of these facts the very important practical question arises whether there be any way in which we can prevent the chinch-bug from migrating from one field to another?

Fortunately the chinch-bug, though capable of flying sufficiently well, rarely uses its wings. It has been said by some, that they only take to flight during their love seasons. Be this as it may, experience has shown that in moving from one field to another, they generally, if not always, migrate on foot. Several plans have been resorted to to arrest their progress. The simplest and most obvious method is to plow a number of furrows a foot or two apart, and as deep as possible, having the perpendicular part of the furrow on the side farthest from the insects, so that, in passing, they will have to climb up a succession of perpendicular barriers of crumbling earth. It has also been suggested to lay dry hay or straw in the bottom of the furrows, to be set on fire when it shall have become well charged with insects. A more elaborate method is to make a barricade of fence boards set edgewise in the ground, the upper edge being smeared with coal tar, which it is said the insects will not pass, especially if it be renewed a few times so as to keep it moist. Short gaps are left in this fence every two or three rods, and under these deep perpendicular holes are dug into which the crowding swarms of chinch bugs may be precipitated.

The efficacy of all such methods must necessarily depend very much upon the thoroughness and ingenuity with which they are carried out. The testimony with regard to them, as might be expected, is somewhat contradictory and unsatisfactory. I mention them so that if necessity require, you may give them a thorough trial.

And now, my friends, in conclusion, I wish to improve this opportunity to enjoin upon you the importance of making memoranda of any interesting experiments or observations that you may make in connection with practical entomology, and communicating them to some central authority where they may be made generally available; and as I am, at present, holding the office of State Entomologist, there is an evident fitness in making me the center of such communications. By taken a little pains in this way, many valuable facts and observations may be preserved from oblivion; my own reports will be made fuller and more valuable; the useful facts thus accumulated can be condensed, classified and disseminated; and much benefit may accrue to you, to me, and to the State, and to some extent, possibly, to the country at large, and to the world.

ON THE ORIGIN AND THE PHYSICAL AND CHEMICAL PROPERTIES OF THE IN-ORGANIC MATTER OF SOILS.

BY PROF. A. P. S. STUART, OF CHAMPAIGN.

It has been said that soil is the raw material on which the farmer's industry is exercised to produce his harvests. If this be so, and the statement seems, in the main, just, the natural inference is, that the more perfect his knowledge of the material, the more successful will he be in working it. This, certainly, is the way we reason in other kinds of business. He, who will manufacture excellent woolen goods must be well acquainted with the material he uses. So fundamental and essential to success is this elementary knowledge, that the young man who will become a successful woolen manufacturer, is at once to the disagreeable task of sorting different kinds of wool in order learn their different qualities. Now, what is true of this, is true of all kinds of business. The clearer and deeper our insight into the nature of the materials we use—the more precise and comprehensive our understanding of the principles and laws involved in their processes—the greater will be our power to modify conditions to produce desired results. Of this we have a remarkable illustration in the different kinds of thoroughbred stock. The results produced in this branch of husbandry by an intelligent and skillful adaptation of means to ends, are truly surprising, and they suggest the possibility of similar improvements in the different kinds of field crops.

On the present occasion, your attention is invited to the consideration of the origin, the physical and chemical properties of the in-organic matter of soils. This theme has been selected in pursuance of a general plan which is being carried out as rapidly as circumstances will permit, viz: an examination, both mechanical and chemical, of the soils of Illinois, to the end that a more definite knowledge of their constitution may prove beneficial to agriculture. It is not claimed that such knowledge, alone, will materially benefit this great industry, any more than the mere knowledge of the constitution of different ores will enable one to extract the precious metals. It is rather only a part of what every intelligent husbandman should know, not simply to conduct his business successfully, in the ordinary acceptation of the term, but to improve it; that is, to originate new and better methods of culture, based on clearly recognized relations of his soil to the crop he will raise on it, and thus to transmit to the future, something more than he has received from the past.

Soils are rocks more or less pulverized, and usually intermixed with variable quantities of organic matter. Originally, organic matter can have formed no part of soils, since, by going back, we approach the beginning of life, when no such matter existed. They are all underlaid by different kinds of massive rock, the surface of which has either been decomposed to form the soil above it, or been ground away and transported to forms soils elsewhere. The former of these results has been produced by certain atmospheric agents, as oxygen, water, and carbonic acid, aided by favorable climatic conditions; the latter chiefly by water and ice.

Wherever the underlying rock is exposed to the atmosphere, it gradually wears away .The alternate expansion and contraction caused by heat and cold, tend to loosen the particles. Moisture is absorbed within its pores, and frozen, by which the particles are forced still farther asunder, and when the frost melts, the particles become de-tached from the parent rock in the form of soil. A soil thus formed must evidently be of the same nature as the rock from which it was derived. In this way, perhaps, the primeval soils of our planet were formed. At least, if the theory of La Place be true, glaciers can scarcely be supposed to have been concerned in their formation. Some rocks, like mica, slate and limestone, yield with comparative ease to atmospheric influences, while others, of firmer texture, withstand them a long time. In certain parts of Pennsylvania, the underlying rock is a kind of gneiss or mica slate, in others, it is limestone, and both, under the above mentioned influences, have furnished some of the most fertile soils of the State. In the same way, boulders and pebbles, particularly those of not very firm texture, gradually wear away and crumble to powder. Even the hard granitic rocks scattered here and there over the prairie, are slowly undergoing disintegration, and contributing their mite to the soil. But what is of special importance in an agricultural point of view, is, that to these same influences is due the further comminution of those particles that constitute our soils. As a rock exposes a vastly larger surface when broken into fragments than it did before, it is easy to see that the disintegrating influence of the atmosphere must be increased, provided the particles are all of the same kind, and the atmosphere has easy access to them. Hence, we see how intimately the mechanical treatment of soils is connected with atmospheric and climatic influences. If we would have a finely comminuted soil, and, therefore, the benefit of those ingredients essential to vegetable growth, we must expose it as much as possible to the disintegrating influences of the atmosphere.

Another and very important agent in the formation of soils, is water. Most of our prairie creeks, especially after rains, are turbid with finely divided matter, held in mechanical suspension. This matter is carried into larger streams, and thence into still larger ones, until finally it reaches the gulf, where it is spread out in the form of a plain or prairie to constitute the soil, perhaps, of husbandmen of some future age. Whoever has seen the great rivers of this mighty valley, thick, almost with the material with which they are freighted, has seen illustrated, on a grand scale, the transporting and leveling agency of water. It has been calculated that the mean annual amount of solid matter carried by the Mississippi to the gulf, is one cubic foot for every three thousand cubic feet of water, and some have estimated it considerably higher, making the total annual amount deposited in the gulf by the Mississippi alone, near four billion cubic feet, a mass equal to a block one square mile in area, and 241 feet deep. Similar phenomena are observed at the mouths of all rivers. The Po, the Rhine, the Rhone, the Amazon, the Nile and the Ganges, have transported so much earthy matter to the sea, that even within the historical era, large areas of fertile soil have been formed, and cities that once were seaports are now many miles inland.

This material, which is fine at the mouth of a river, and which becomes coarser as we ascend towards its source, is the result of the mutual grinding of rocks against each other by the force of running water. This constant attrition reduces coarse rock to pebbles, pebbles to sand, and sand to the impalpable powder so often found in soils. If the country between the source of a river and its mouth is traversed by mountains or highlands, forming deep depressions here, and broad expansions of uneven surface there, lakes will be formed, and during heavy rains inundations will flood those portions of country but little elevated above the river's channel, and cover them with deposits of coarse or fine material, according to the violence of the current. Gradually the lakes will be filled with sediment, and become valleys, with the river winding through them, and the uneven expansions of country will be changed into broad plains; and thus it is that the rocks of mountains are transformed into fertile valleys or extended prairies.

It will be at once apparent that the agricultural resources of a State depend, in large measure, on the nature of these deposits, which constitute its soils. Their physical and chemical constitution, as well as the peculiar climatic conditions to which they are exposed, will determine the nature of the vegetation; and as transported soils are formed by the grinding up, not simply of one kind of rocks, but of many, extending often over large areas, they must naturally contain all the constituents essential to a luxuriant vegetation. Such, in general, are the soils of the prairie. We find in them pebbles of almost all kinds of rocks, showing that the agent that brought them hither, took them from as many different localities.

But this attrition of rocks is not limited to the beds of rivers and mountain torrents. It is in constant and active operation on the seacoast, where in storms and by the action of tides, the surf beats the pebbles and sandy particles against each other, reducing them to powder, and depositing it in the sea. Often, also, from marine currents or prevailing winds, the sea encroaches on the land, undermining cliffs and depositing them in the sea. The coasts of England, in several counties, are thus washed away at the rate of several yards a year, and the names of several places, once towns of note, exist now only in history. The cliffs of the Bay of Fundy, which often rise from fifty to several hundred feet above tide water, are subject to similar erosion and are constantly receding.

But a clear and more impressive conception of the erosive and transporting agency of water is derived from its effects as seen in those immense systems of strata that bear the name of geological formations. From these it appears that a large part of the earth's crust has, at one period or another, passed through changes similar to those now taking place. These strata were once pulverized by attrition, spread out as fine sediment on the bottom of the sea, formed the abodes of different species of marine life, became in turn, by the pressure of superincumbent strata, hardened into rock, and finally upheaved, and exposed again to atmospheric or acqueous influence, are either softened into soils, or carried again to the sea.

Another agent, in connection with water, that has had much to do with the abrasion and transportation of rocks, and which has impressed one of its most prominent features on the New England landscape, is ice. Icebergs, freighted with bowlders, gravel and finer material, are annually floated from cold to warm latitudes, where, enveloped in fog, they gradually melt and drop their burden. The same process, on a smaller scale, is taking place every winter in latitudes not much higher than our own; and even in our own it is not uncommon for ice to form in our rivers, inclosing rocks that line their banks, and bearing them in spring down the stream, grinding and furrowing, it may be, the rocks of the river's bed, where the water is shallow. The coast ice, which forms on the shores of the Bay of Fundy, incloses blocks of trap and bears them out into the Bay, where it deposits them; and a most interesting fact in this connection, to the geologist at least, and which teaches that this process has been in operation during an unknown lapse of time, is, that on the very spot where this is now taking place, blocks of old trap, partially decomposed, yet having their angular form as sharply defined as when first broken from the parent rock, are seen imbedded in the cliffs of the new red sandstone, where they must have been deposited by ice in a former geological era. Blocks of granite line the shores of the river and gulf of St. Lawrence, whither, with gravel and finer material, they have been carried and deposited by ice; and in the Baltic Sea, where the water freezes to a depth of five or six feet, immense masses of rock, with the usually accompanying debris, are frozen in, and on the breaking up of the ice, are floated to great distances. Could the Bay of Fundy be drained, its bed would most certainly be found covered with bowlders of trap; and could the floor of the Atlantic, between Greenland and the Gulf stream, be laid bare, it would most certainly present a scene not very unlike a New England landscape, thickly bestrewn with bowlders and earth as different in composition as the sources whence they came, and diminishing in size and quantity as we go southward. The same fact is true of the bowlders of this State, and is similarly explained. They are all of northern origin, very unlike in constitution and diminish in size as we advance southward. This fact is true even of the soils of the central and southern parts of the State. The sand of a Union county soil is much finer than that of a Champaign county soil. This may be owing, perhaps, to local causes; but if the soils examined are average specimens of their localities, and due to the same cause, they show that it diminished in intensity as it moved southward.

Another agent, that has been concerned in the formation of soil, is the glacier; and so important is this, in the judgment of some, that all others, in comparison with it, sink into insignificance. The theory had its origin in the study of the Alpine glaciers, those immense masses of ices, which move slowly down the valleys, carrying on their surface the rocks that fall from the cliffs above, and pushing along the rocks beneath and grinding them against their rocky bed. The effects of this enormous friction, resulting from the pressure of a mass of ice several thousand feet deep, are, first, to reduce to powder an immense amount of rock, which is swept by water to lower levels to form soil, and secondly, the scratching and furrowing of the rocks that form the sides and bed of the valley. These scratches and furrows, when covered and thus protected from atmospheric influences, remain as a permanent mark of glacial action; and it is assumed by those who trace the origin of soils chiefly to such action, that those furrows, wherever found, indicate the existence at some time of a glacier. Now it is well-known that the underlying rocks of a large part of this country, extending from Nova Scotia to, as some say, the base of the Rocky Mountains, are covered with grooves and scratches, having, in general, a direction from north to south, and extending to about the 38th degree of latitude. These furrows are not found scattered here and there, as if produced by an occasional and accidental cause, but the whole surface of the rock exhibits unmistakable evidence of having been ground away by some gigantic and uniformly acting cause. It is scarcely possible to dig through the alluvium of any part of New England on to the underlying rock without finding these furrows. Their similarity to those found in the Alps, and the conviction that no other known cause can adequately account for them, has emboldened some to assume that the whole northern part of this continent was once covered with a vast unbroken sheet of ice, several thousand feet deep, moving slowly towards the south, grinding away the rocks beneath, and producing the formation commonly known as the drift.

At the same time, there are those, who, admitting in general the agency of glaciers in pulverizing rocks, have still grave doubts whether the cause has been as extensive as is claimed by some; whether the grooves and scratches are all due to glaciers, or in part to icebergs, and perhaps other causes, and particularly whether the ice of the glacial epoch extended over all this valley, as far as the gulf.

Now, to arrive at truth here, it is necessary, as in every other question, to study carefully and thoroughly all the facts relating to it, and then, unbiased by any preconceived opinion, to judge impartially. Every pebble and every fossil of the prairie, whether vegetable or animal, found by digging through its strata, should be most sacredly preserved and studied, and made to testify of forces and conditions which led to the present state of things. And here it may be said that a rock imbedded in the earth, and thus preserved from atmospheric influences, will indicate the kind of action to which it has been exposed. A rounded pebble has received its form in the bed of a stream, or on the sea coast, or other similar place, where it has been dashed against its fellows until its angular parts have been worn away. Another has an even surface, as if made with a plane, polished, it may be, or covered with grooves and scratches. Such a rock has been exposed to entirely different conditions. Instead of having been rolled about, it has been firmly fixed in some material, like a precious stone in its setting, and its surface ground away by rocks that have been swept over it; or it has been frozen into ice, and borne by the current of a stream, or of the sea, over other rocks—having been thus ground itself as well as having ground the rocks against which it impinged. Sometimes rocks exhibit marks of both kinds of action. With a generally rounded form, a pebble will have one side planed off, so that the intersection of the curved and plane surfaces is so sharply defined that the forces which acted become as apparent as the effects produced. Even the direction of the motion, relatively to the rock at least, is easily distinguishable on the surface. Besides the strata themselves, of fine material, will often throw light on the conditions to which they have been subjected, and the changes which they have undergone.

Now, although opportunity for this kind of observation and study of the prairie deposits has thus far been limited, still certain facts are been noticed which may not be uninteresting to state, and which may have a bearing on the question, whether a glacier several thousand feet deep once covered this State and prepared it soils.

As we descend through the strata in this locality, the first fact that arrests the attention, after passing through some four and a half feet of rich black soil, is a coarse gravel about eight feet deep, composed of the most heterogeneous materials, indicating a great diversity of origin. The particles of quartz are generally more or less rounded, some of them as much as those found on a sea beach, while the coarser materials, consisting largely of different kinds of slate and chert, are more angular, showing that they have been exposed to less aqueous action, than the rounded and polished pebbles of quartz. Among these small fragments, not larger than hazel nuts, are sometimes found, though seldom it is true, specimens with distinctly furrowed surfaces. Passing then through a layer of sand seven feet thick, we come to the blue clay, the interesting feature of which is its numerous pebbles with grooved surfaces. These pebbles represent many kinds of rocks, mostly of northern origin, including granite, syenite, metamorphic slate, quartzite, greenstone and magnesian limestone. They are remarkable examples of glacial action, and impress one with the energy of the force with which their furrowed surfaces have been ground away. These pebbles are more abundant in the hardpan below the blue clay than in the blue clay itself, and are found occasionally in the red clay below the hardpan to a depth of fifty or sixty feet. One of their most singular features and difficult to explain, but which, so far as we are able to judge, points rather to the glacier than to any other cause, is the fact that they are often grooved on two opposite surfaces. These surfaces, though sometimes parallel, are usually inclined at some angle, giving to the pebble the form of a keystone. The grooves on one surface, although parallel in the main to each other, are seldom if ever parallel to the grooves on the opposite surface, a fact showing that the surfaces were abraded at two different, though perhaps immediately successive times. Often also two, and even more sets of grooves are distinguishable on the same surface, which may have been produced by the slipping or turning partly round of a pebble, as the ice pushed it along over an uneven bed. This is conceivable and even probable; and even the turning completely over of a pebble, so as to produce two opposite grooved surfaces, may be, by no means, impossible. A rounded pebble with a plane surface, having two or more sets of grooves, indicates something more than glacial action; at least it is difficult to see how the smooth oval part could have been produced by the same cause that produced the plane with its grooves. Perhaps the most reasonable explanation is that the stream under a glacier produced the oval form, while the ice in which the pebble was afterwards entrapped and forced along, produced the plane with its different sets of grooves.

Another fact of importance in this connection is, that not only pebbles and small bowlders, two or three feet in diameter, occur in the prairie deposits, but huge blocks of several tons weight, which must have required large masses of ice, either in the form of a glacier or of icebergs, to bring them hither. At Chatsworth, a bowlder of magnesian limestone, weighing some ten tons, and having its surface grooved, was found only one or two feet below the surface, and lying, if we mistake not, on a stratum of earth. It seems scarcely possible to account for this in any other way than by an iceberg. All these facts are extremely important and interesting, since, when correctly interpreted, a pebble is not only made to tell its own individual history. but to throw light on those mighty forces which prepared for us our soils.

Passing through the red clay we reach at a depth of seventy-six feet a layer of black, peaty material, rich in ammonia and other nutritious matter, with occasional fragments of wood, and filled with the remains of several species of fresh water shells. It is evidently an old soil, and in this particular instance, probably a marsh. It is without doubt a continuation of the same soil that was struck in two places at Bloomington, at a depth of 118 feet, where logs were found scattered promiscuously about, and the stump of a conifer still standing where it grew At Jacksonville the same soil with trunks of trees (cedar) was struck at about the same depth, and at Crawfordsville, Indiana, it was found at a depth of ninety feet, also with trunks of trees. It has been traced as far north as Beloit, Wisconsin, and several other places, but with no animal remains, so far as known, except in this instance. Here then we have the old surface soil of this valley covered with dense forests at the close of the tertiary and the beginning of the glacial epochs; for on this soil lies the drift.

It will be seen that this old soil has a direct bearing on the question whether a glacier extended over all this valley to the gulf during the glacial period, and by melting left its debris in the form of drift. Whatever glaciers may have existed in ages previous to that of the drift, is a distinct question by itself; but that a mass of ice several thousand, or even one thousand feet deep, could have moved from the north over this valley to the gulf during the glacial period, without having obliterated every trace of this old soil, is certainly very difficult to understand. And yet the materials of the prairie deposits do plainly point to the glaciers; and the only reasonable explanation of this, so far as observation has yet taught us, seems to be, that during the glacial period, glaciers did exist at the north of us, but did not extend so far south as the northern limits of this State; that this valley was all under water, and that the relation of land to sea was very like, perhaps, what now obtains between Greenland and the Atlantic Ocean, where phenomena are now taking place perfectly similar to what once, probably, prevailed here. If this be so, these grooved pebbles, gravels, sands, and even soils, perhaps, of the prairie, many of which are more or less stratified, were formed at the north of us by glaciers, and transported hither by water and ice, which scattered them over a large part of this valley. Still, this view of the subject is not without its difficulties, and it is better to wait for the light of new discoveries than to assert dogmatically what may hereafter prove untrue.

Perhaps an apology is due for having dwelt so long on this question. Our only excuse is, there are very many otherwise intelligent persons, who have very queer notions of how their soils have been produced. An anecdote will illustrate this. In a certain State where bowlders are far more abundant than here, a person was once upon a time actively engaged, with mechanical appliances and animal strength, in removing from a field the bowlders which nature had most lavishly distributed there. A passer by, curious to know his ideas of the drift, inquired, whence he supposed those bowlders came. Pausing a moment, and lifting his eyes with astonishment on the inquirer, that so simple a question should be asked, he replied: Why the Almighty placed them there when he laid the foundations of the earth.

The more practical part of the subject now presents itself, viz.: The Physical and Chemical Properties of Soils. By physical, are meant those properties which distinguish soils with reference to their consistence, density, porosity; their power of absorbing and retaining moisture, heat, gasses, and particularly their power of absorbing and retaining certain alkalies and alkaline earths, together with phosphoric and silicic acids, whether added as manure, or set free gradually by the decomposition of the mineral or organic matter of soils. These physical properties, on which, when existing in proper degree, depends so much the fertility of soils, vary chiefly with the sand, clay and humus of soils. A soil consisting entirely of sand, it matters little whether it be silicious, calcareous, feldspathic, or other material, has but little, if any consistence. As its particles touch each other at but few points, it is too porous for successful cultivation. If it readily admits the rain, it as readily parts with it both by drainage and evaporation, allowing thus the materials to escape which should be retained for plant growth. Moreover the interstices being large, but little moisture rises by capillary attraction, and but little is absorbed from the atmosphere, so that the soil being dry, not only becomes unduly heated by the sun, but retains the heat to an extent ill-suited to vegetation. Besides such a soil affords but slight support to the roots of plants, and is easily blown about by winds.

Nevertheless a sandy soil made up of very finely comminuted particles of all kinds of rocks may be, and often is, very fertile, for a reason to be given hereafter. Such, to a considerable extent, are the soils of the prairie. They are due, originally, as we have seen, to the pulverization, rather than to the disintegration or the decomposition of a great variety of rocks, for it must be borne in mind that these three terms indicate very different kinds of action. Pulverization is the grinding up of rocks by friction against each other. Disintegration is the breaking up of a rock into small integrant particles by heat and cold, as when a rock, heated and plunged into water, crumbles easily to powder. In nature the changes of temperature are neither so sudden or so great as in this case, but yet effectual, especially when aided by frost. Decomposition is the resolution of rocks into new chemical compounds, the process by which the food locked up in them becomes available to plants, and it is greatly promoted either by pulverization or by disintegration. Hence the finely divided state of a soil is a physical property intimately connected with its fertility.

On the other hand, a purely clayey soil has exactly opposite properties. It has great consistence, is slightly porous, absorbs water with avidity, and parts with it reluctantly. When moist it is plastic, and adheres firmly to whatever it touches, and is thus difficult to cultivate. In rainy seasons it cannot be worked until late, and even then with difficulty. It is not only wet but cold, from the constant evaporation at its surface. In dry weather it bakes, and becoming hard, prevents the roots from penetrating it. Its most remarkable property is its power of absorbing ammonia, potash, lime, magnesia, phosphoric and silicic acids, substances essential to the healthy development of plants; and it is doubtless to this property, that is due the fertilizing nature of clay in soils.

Such are some of the physical properties of two extreme kinds of soils, known generally as light and heavy, sometimes, also, as lean and fat soils, neither of which is desirable for tillage. Between these extremes exists an indefinite number of other soils, with physical properties varying with the relative quantities of sand and clay contained in them. A soil containing such an admixture of these substances as will mutually compensate the defects of each—which is neither too wet in rainy seasons, nor too dry and hard in drouths—which, by cultivation, readily becomes porous, so that roots can easily penetrate it, and the atmosphere circulate through it—is best suited for agricultural purposes, and will yield the most remunerative returns. The clay in such a soil is even more effective in absorbing the constituents required by plants than when pure, because the water containing these substances is more readily absorbed by such a soil than by a purely clayey one. This is illustrated by what formerly took place here on the burning over of the prairie. The country, of course, was covered with a layer of ashes, rich in potash, and when the rain fell too rapidly to be all absorbed, it flowed from the surface, carrying the potash with it, and imparting to streams a strong, alkaline property. Had the water passed through the soil, the clay would have absorbed most of the alkali, and retained it for future use. For the same reason but little alakaline matter is usually found in the water of drains. In the decomposition of the vegetable and mineral matter of porous soils, the ammonia and other alkaline substances are absorbed by the clay; and it is clay also to which is due the decolorizing and deodorizing nature of soils, a property which, in consequence of a special application in the form of earth closets, has, of late, been pressed on the public attention as something new.

But a few years since this absorbent property of soils was specially investigated by Way. He found that sewer, and other foul water, when filtered through a layer of porous earth, thirty-four inches thick, was entirely deprived of its smell, its ammonia, potash and phosphoric acid; in fact, that all substances essential to the nourishment of plants are absorbed and retained to such an extent, that a soil, ten inches thick, when saturated in this way, would contain twenty times as much nutritious matter as is usually spread over it for fertilizing purposes. Could all the sewer water, now passed from cities into rivers and thus lost, be distributed over the soils of the adjacent country, what an immense amount of plant-food would be utilized, and what an increase of harvests would accrue through the agency of this property of soils.

If we seek for the cause of this absorbent property of clay, we shall find it, probably, in a powerful surface attraction, similar to that by which gasses and coloring matters adhere to the surface of porous charcoal. Some have supposed, however, that the action is more chemical than physical in its nature, and that the absorption of the alkalies is accompanied by the formation of insoluble silicates, resembling the feldspars. The results of certain experiments made to decide this question seem to point in this direction. It is by no means easy to draw the dividing line between physical and chemical forces—to say exactly where one ceases and the other begins—any more than it is to fix the precise point of time when a person ceases to be a boy and becomes a man. They graduate, so to say, into each other; and it is by no means improbable that in this strong attraction of clay for the alkalies, we have the incipient manifestations of the force which, under favorable and prolonged conditions, produces the chemical compounds known as the feldspars.

Again, the decomposition of organic and mineral matter is largely dependent on a suitable mixture of clay and sand: that is, on a proper consistence of soil. Such decomposition is best promoted by a moist and porous soil—one neither too wet nor too dry, and to all parts of which the air is easily accessible. Indeed, such decomposition is entirely prevented by the exclusion of the atmosphere. The underlying rocks, that were furrowed and then buried beneath deep deposits, retain their furrows, as sharply defined to day as when they were originally engraved. Where they have been exposed to the atmosphere for a considerable length of time, not a trace of them remains. The old pliocene soil, one hunded feet beneath us, with its trees and shells before referred to, is apparently as fresh now as when first covered with the drift. In like manner the fine particles of ground-up rocks—in other words, our soils—when protected from atmospheric influences, remain unchanged, and the elements in them suited to plant growth, are as useless for this purpose as if they did not exist. That this is so, is shown by isolating the sand of almost any soil, and analyzing it. In this way, we learn that the fine sand of soils from Union and Champaign counties contain the alkalies soda, potash and lithia. These three alkalies have also been detected, in very small quantities of soils, from Greene and Kane counties in this State, also in soils from Indiana, Ohio and Pennsylvania. Indeed, it would be a matter of surprise, if, in a quantity of any soil not larger than a pea, all these alkalies could not be found. The sand of a Union county soil is especially rich in these alkalies, a fact somewhat singular, since the soil has been under cultivation forty years without any manure, not even a green crop plowed in, with only two to four inches depth of plowing, and a continued cropping of wheat or corn, chiefly corn. And yet this soil, containing some ninety per cent. of an unpalpably fine sand, as fine as the finest emery, is rich to day in all the elements of fertility, excepting, perhaps, sulphur, of which there is only a trace. To such an extent has this compact soil, containing but three per cent. of organic matter, been protected from the action of decomposing agents, that its sand has apparently an ample supply of plant food for some time to come. The fertility of this soil seems to be owing to the slow and constant weathering of its sand, which, though not very much exposed, is sufficiently so to set free the requisite amount of mineral matter as fast as it is removed by cropping. This soil, however, seems to be exceptional in its character; at least, it would not be safe to treat all soils as this has been treated, unless the object were exhaustion. In the experiments of Way, made to ascertain the effect of the constant cropping of barley, potatoes, turnips and miscellaneous crops without manure, signs of exhaustion were apparent even in nine or ten years; and the soils of the prairie, although somewhat more durable, perhaps, have shown, in many instances, similar results.

We pass now to the chemical properties of soils. By these are understood those properties in virtue of which new chemical compounds are formed, and especially those which are in some way concerned in the production of the proximate constituents of plants. It may be laid down as a fundamental proposition, that certain mineral substances, as potash, lime, magnesia, phosphoric and silicic acids, and some others, are essential to the healthy development of plants. Of this, there can be no more reasonable doubt than that a skeleton is essential to the normal condition of a vertebrate. And yet, not long ago, it was a grave question with thinkers on this subject, whether these substances, constituting the ash, were essential or merely accidental constituents of plants. The establishment of this fact marks a step forward in this era of thought and progress. The intelligent agriculturist of to-day, if, indeed, one can lay claim to intelligence whose knowledge of the functions of the substances in plant life is still very indefinite, stands on firmer ground than he did half a century ago. If he does not yet know exactly how they act, he knows, at least, their presence is necessary to vegetable growth, and that it is his interest so to manage his soil that they shall be present in the proper condition and quantity for the use of his crops.

But to be a little more particular: what is meant by a chemical property, and especially an active one? In general, it may be said to be the tendency of a substance to combine with another, and form a third different from either; and an active chemical property is this tendency existing in a remarkable degree. Thus, if lye obtained from wood ashes be touched to the tongue, it will attack it, or if added in the form of soap to the hands, it will attack them, destroying the cuticle of the skin and giving to it that slippery, slimy feel, so familiar to every one; or again, if added to sawdust, it will attack that, decomposing it, and disposing the atoms to arrange themselves in the form of oxalic acid, a substance with properties exactly opposite to its own. When, therefore, wood ashes are spread over a soil, lye is put on it, and a chemical property is imparted to it. The ancient farmer did it because experience or tradition taught him that wood ashes in some way served some good purpose. They made his soil more fertile, he got a better crop. The modern farmer does it, or should do it, because science teaches him that he cannot have a crop without them, or something equivalent to them; that he might as well attempt to make brass without copper, as to raise a kernel of corn without potash.

In like manner soda imparts to soils a chemical property peculiar to itself; so do lithia, and lime, and magnesia; so do phosphoric and silicic acids; and so do many other substances. These chemical properties all differ from each in kind as well as degree. Some are energetic, others indifferent; but each has an individuality of its own; and it is to this labyrinth of chemical properties or forces, modified by every variation of climatic influence, that all the reactions and compounds of a soil are due.

The oxygen of the air also has its peculiar chemical property, and in the form of ozom, a remarkably active one—a state of unrest—an apparent desire impelling it to seek out and unite with some companion; and then, as if tired of the union, shortly after, perhaps, to get divorced. The same is true of carbonic acid, and to a certain extent of water itself.

Now let us trace the effects of these chemical properties in the production of soils. We speak often of the weathering of rocks, when exposed to atmospheric influences. They disintegrate and finally crumble to powder. Not only so, they undergo chemical decomposition, and give rise to new chemical compounds. Take the granitic bowlder lying exposed to the atmosphere. Its surface is rough, caused by the more rapid decomposition of some of its parts than of others. The angular, but often more or less rounded prominences are quartz, a very insoluble mineral, at least in water. The depressions are caused by the dissolving out of the feldspar, a mineral composed of silicate of alumina and of silicate of an alkali or alkaline earth. Now when rain, containing carbonic acid from the atmosphere, falls on the bowlder, it not only tends itself to decompose and dissolve the feldspar, but it brings the carbonic acid into intimate contact with it. The chemical property of the carbonic acid is to combine with the alkali at the ex pense of the silicic acid, forming a carbonate instead of a silicate. This alkaline carbonate being soluble, seems to have the property of dissolving the silicic acid which has been displaced, and thus both are carried to the soil, and made available to plants. This process goes on, of course, with extreme slowness, especially when the rock has a very firm texture. Nevertheless the surface, when carefully examined, exhibits evident marks of decay, looks quite different from a freshly fractured one, and is often coated with a perceptible quantity of white silicate of alumina or kaolin, which remains after the removal of the alkaline carbonate and silica. When the water penetrates through the interior of the bowlder, the decomposition advances with equal pace, and the rock gradually becomes less coherent, until finally it breaks easily into fragments. In such cases it is not uncommon to find a fine white incrustation lining the crevices of the interior. This is usually carbonate of lime, and has been formed by the lime of the rock combining with the carbonic acid of the water, or of the alkaline carbonate. If the rock contains an iron compound, the carbonic acid often decomposes it, and forms a new iron salt; and when this is exposed to the air, the iron is often attacked by the oxygen and changed to iron rust, causing the dark brown spots so often seen on rocks, as well as the iridescent film often seen on the surface of stagnant water.

The yellow sulphide of iron, often mistaken for gold, and so frequently seen in soft coal, is the most apparent as well as the most common example of the action of oxygen in producing changes in rocks. In this case both the iron and the sulphur are oxydized and converted into copperas; and when this is further exposed to the air, the iron is changed to iron rust and deposited as bog iron ore. Sometimes this iron salt filters through a soil charged with organic matter, and the iron is not converted into iron rust until it reaches the subsoil, where it acts as a cement, binding the gravel and pebbles together into a kind of rock called hardpan. Other substances, also, as lime, silica and clay, act as cements, but in a somewhat different way.

The solvent power of carbonated water on limestone, due chiefly to the chemical property of carbonic acid, scarcely need be mentioned. It is well known to be the source of a large part of the lime dissolved in our soils and springs, and to have excavated those immense caverns so frequent in limestone regions.

Before closing, I wish to call particular attention to the solvent power of pure water, and the relation of this power to the fineness of the material on which it acts. In this way the relation of the fineness of a soil to its fertility will become apparent. It is a common notion that many kinds of rock are insoluble. At least they are often spoken of as such. The truth is, there is scarcely a rock but yields more or less to the action of water, and the more in proportion to the amount of its surface exposed. The experiments of the Messrs. Rogers are very instructive on this point. They pulverized a large variety of minerals, usually considered insoluble, and treated them with pure water and with carbonated water, carrying on the two sets of experiments side by side, and observing all the necessary precautions. When the mineral was very finely pulverized and treated with pure water a considerable time, and then filtered, the first drops of the filtrate gave an alkaline reaction, while with carbonated water the effect was recognizable in less than ten minutes. With pure water the effect was much weaker than with carbonated water, still it was perfectly decisive in almost all the minerals tried. By digesting finely powdered feldspar, hornblende, grammatite, epidote, mesotype, chlorite, serpentine, and some twenty others, in pure water a week, and in carbonated water 48 hours only, they found that silica, alkalies, lime, magnesia, iron and alumina, had been dissolved to an extent equal to from .4 to 1 per cent. of the minerals taken. The solvent power of water was, doubtless, increased by digestion, but it can scarcely be doubted that the same effect would have been produced by cold water in a long time.

The application to soils of the truth taught by these experiments, is plain. The soils of the prairie contain, without doubt, more or less of all these minerals; and it is evident the more finely pulverized they are, the more readily they will be dissolved by water, and the more mineral food will they furnish for the crop. In this way, a very finely comminuted soil, like that of Union county, or of some river bottoms, seems to have an inexhaustible fertility, because the decomposition of mineral matter keeps pace with the demands of vegetation. Were the particles of soil coarser, or less exposed to the combined influences of water, carbonic acid and oxygen, the supply of mineral food might fall below the demand; that is, there would be, to that extent, exhaustion, to be remedied by manure or fallow.

It is very probable that this is not the only principle involved in the explanation of the apparently permanent fertility of soils; but that it finds a place in it, seems to be plainly taught by experiment; and we will only add that these chemical changes taking place in a soil with greater or less activity, according to its more or less favorable conditions, sustain an intimate relation to an intelligent system of agriculture, and commend themselves to the careful attention and study of farmers.

Soda Feldspar,
Potash Feldspar,
Lithia Feldspar,
Glossy Feldspar, (Sanidin),
Labrador Feldspar,
Mica,
Leucite,
Tourmoline,
Augite,
Coccolite,
Hypersthene,
Hornblende,
Grammatite,
Ashertus,
Olivina,
Chalcedony,
Epidote,
Analcime,
Mesotype,
Scolerite,
Axinite,
Prehnite,
Talc,
Steatite,
Chlorite,
Serpentine,
Obsidion,
Lava,
Greenstone,
Gneiss,
Hornblende Slate.

FLOWERLESS PLANTS.

BY T. J. BURRILL, PROFESSOR OF HORTICULTURE.

Our common idea of a plant is a living growing structure, fastened by roots in the soil, bearing leaves that are elevated upon stems and branches to catch the sunlight and air, budding and blossoming in charming beauty and delightful fragrance, and finally bending under a heavy load of seeds or fruits. But if we should work these things into a definition, it would exclude every one of a host of vegetable forms, with which we have now to deal. The distinctive characteristic of the plants under consideration, is that given as the heading of this paper—flowerless. Let us fully understand what a flower is. The cultivated rose, with all its beauty, can not lay claim to it, for the arts of man have destroyed the essential parts, and turned them into showy but useless appendages. No seed is started into existence by our double-flowered roses. On the other hand, many of the forest trees—the oaks,the elms, the hickories—are popularly supposed to have no flowers, when, in fact, they produce countless numbers of true flowers. Botanists call the outer-whorl of usually leaf-like bodies in the flower a *calyx*, its individual parts *sepals;* the next row is the corolla, and the parts petals. These are the most conspicuous parts of the flower, yet are wholly unessential. It is to the center of the flower that we must look for organs, really useful in the reproductive process. These are the stamens and pistils, answering respectively to the male and female sexes among animals. It is not necessary that these should be in the same flower, nor indeed upon the same plant, but no seed, in the proper sense of that term, ever comes into existence, without a previous combination of these two parts of the flower. The stamens produce the pollen, which is carried about by the winds, or by insects, or in many cases falling directly upon the pistils, quicken, in some mysterious way, the embryonic cell into new and hitherto unknown life, thus beginning the formation of a seed. Now, though the flowers may be unnoticeable with common observation, all our trees, shrubs, grains, grasses, vegetables, weeds and any other plants with us, having a woody stem, a fourth of an inch, or more, in diameter, and any that are made generally useful, as food or covering, for man or beast, do produce true flowers, and bear true seeds. Notwithstanding all this, at least one-sixth of the named plants belong to the flowerless type, and the time undoubtedly was when they constituted almost the entire vegetation on the globe. And there still remain thousands of other species, waiting for the botanists' researches, and names, to swell the number of flowerless plants now existing, even beyond the recorded number of flowering species. Of these the microscopic world has myriads of specific forms, which have, until recently, been almost unknown, and what is most strange, many of these minute beings, long classed as animals, on account of their free and evidently voluntary motions, are now positively known to be true plants. It is no longer an unsettled question about the rapid and varied movements of the lower orders of purely vegetable forms. But a large number of flowerless plants are by no means microscopic. The ferns, the mosses, the mushrooms, the moulds, are fair examples. Who ever saw a flower upon a puff-ball, or a toadstool? How many aquatic plants are there that never bloom?

Linnæus named these plants *Cryptogamia*, meaning hidden marriage, while those with flowers were named *Phenogamia*, open marriage—the latter, owing to the fact that the stamens and pistils were readily seen, and the reproductive process could be readily traced, while analogous parts, and analogous processes, could only be guessed at in the Cryptogamia, or flowerless plants. Extended research has proved, however, that they have something answering to these parts, though disguised under a multitude of forms, and their operations varying in wonderfully different ways. Instead of seeds they produce spores differing from the former in not having within an embryo or rudimentary plant, and by germinating irregularly without the fixed point of beginning, as in seeds.

It was said, a moment ago, that all the plants in our region of country, which attained any considerable size, or which furnished any the staple article of use, whether as food, or materials for building or clothing, were flowering and not flowerless plants. What then are the uses of the latter, and why spend our time in their study? Let us see.

(1.) They are the simplest in structure of all plants, and as the vegetable processes are the same as in the higher plants, we may far more readily study their secrets in the work of elaborating food, of increasing in size, and of giving rise to new beings like themselves. Hence, he who would know the requirements and action of vegetation of any kind, must begin with these humble beings so peculiarly fitted for his examinations. When we descend to the lowest plants, a simple, isolated, round microscopic cell, performing all the complicated functions of vegetative life, meets our astonished gaze. The red snow plant, of the Polar regions, and another of the same genus (*Protococcus*), with us, sometimes seen in red streaks and patches, looking like stains of blood upon the shaded and moistened side of rocks and banks, are of this character. The cell has an outer and inner coat, and a thick fluid mass within. They individually obtain their nourishment from the air or water, and increase in number by self-division, but are also known to give rise to young plants by two cells uniting and mingling their fluid contents. The green scum that forms upon stagnant water is another example of these lowest of plants, sometimes one-celled, sometimes many-celled, constituting a thread-like filament.

(2.) The study of the flowerless plants helps us to understand the past history of our mother earth, when she produced little or nothing of a higher organization. The coal we now use for fuel, came in great part from flowerless plants. Those were the good old days for the Cryptogamia, when moss-like plants grew to the giant size of oaks, and ferns vied with the towering palm.

(3.) The information, gained by a careful study of the development of these plants, throws much light upon the mooted theories of spontaneous generation of living beings—theories so often advanced, and sometimes so seductively argued. The advocates of the doctrine that living beings can be produced by the union of certain chemical elements, or brought into existence by chance, or through the agency of any of the natural laws, other than those referring to direct parentage, always point for illustration to the lowest forms of vegetable and animal life.

It *is* indeed strange that water, left for a few hours in a warm place, will be found, when examined by the microscope, swarming with moving bodies; and the question naturally suggests itself, where do they come from? And when the water is previously boiled to kill all living things, and then kept in an air-tight vessel, the wonder is much increased to find the same maze of living, eating, growing bodies, seemingly enjoying to the utmost their lease upon life. So it is passing strange that moulds, which are as true plants as the evergreens in our door yards, appear whenever and wherever any moist organic substance is found, for their development. A piece of cheese put away in a damp cellar, will as surely rear upon its surface a pigmy forest of bluish vegetation, as will a well-seeded and tilled field, under favorable conditions, produce its crop. So, too, it is strange that young timber of a different kind from that previously cut, should spring up from "cleared" land, yet no observing man will for a moment doubt but that these young trees came from true seeds. The weeds appearing the first season after we turn over the prairie sod, are likewise known to start from seeds. Now when we find, by prolonged observation, that these minute forms in a drop of water are subject to the same laws as the above trees and weeds, in regard to life and development, we may cease to speculate upon the possibility of living beings—plants or animals—originating from the inorganic elements, without the intervening power of a creator. Prof. Henry James Clark, whose experiments upon this subject are recorded in his book called Mind in Nature, now in the University library, thinks he has proved the spontaneous production of animalculæ in closed vessels, but he is also candid enough to record the fact that when his fluids are boiled for a long time or for a short time under high pressure, and then kept sealed, no living things afterward appeared. Evidently, simply boiling for a short time did not kill the germs, and the prolonged boiling did kill them. In order, however, to account for the production of plants, in many cases, we must assume the almost ubiquity of seed-like germs. Without doubt, if we could sharpen our vision sufficiently, these bodies would now appear floating in the air around us—settling as dust here and there, ready always to germinate and grow when the conditions prove favorable; and these same particles, though ever so minute, are as fully endowed as we are ourselves with that mysterious vitalizing principle which we know distinguishes us from the dead, inert, inorganic clods of earth. The whole world of chemical elements, aided by the combined wisdom of men, evidently cannot originate the smallest life germ of the humblest plant.

(4.) The next reason we advance for the study of these plants, is their usefulness to ourselves. Though we have said no flowerless plant with us produced any staple article of food for man or the higher animals there are some which do far more than mean service in this particular. The so-called Reindeer moss (*Cenomyce rangiferina*) supplies, not on;

that animal with food, but renders existence possible to a large number of human beings in the cold regions of earth. The plant is peculiarly adapted to its use, for the deer has only to scrape away the snow to find it in perfect condition in winter. Though dry, it is not dead. The pasture is absolutely never failing; through heat or cold, drouth or excessive rain, the flowerless plant vegetates, and grows in sufficient quantities to meet the demand. Lichens and Algæ have often been used for food, but within the last few years a peculiar process of manufacturing has furnished the world wlth a new article of food from them, named "Sea Moss Farine," now too well known to need further mention. Some of the Fungi are extensively cultivated, and used for food. The common mushroom grows in almost every part of the world, and forms with the morel and truffle, in some European countries, a large supply of food. I venture to predict, that some enterprising individuals in our own country will yet make their fortune by the cultivation of the mushroom, and if so, they will furnish to the people an article of food as delicious and healthful as it will be new to many.

Some of the flowerless plants perform an office in nature for which hey get very little credit, but which is eminently important to the well-being of man. Their home is upon decaying and putrifying masses of organic matter, whose pernicious gases they imbibe and hange into their own harmless structure. We know not what fearful estilences would ravish and desolate the earth, nor how often they ave been stopped by the influence of these humble instruments—the cavengers of the vegetable kingdom. Another important service is lso rendered by the lowest plants in their pioneer attempts to create soil for the growth of those to come after, higher in rank. The sur- ace of a naked rock, left exposed to the air, soon becomes coated with osses and lichens, which, drawing their nourishment from the air, laborate the elements, die and decay upon the spot for generation fter generation, until a soil is formed upon the hardest rock, for the roduction of more noble forms of vegetable growth. This work has een in progress during the long ages of time, and has changed the rth from arid wastes of cheerless sand, to the fertile valleys and gen- ous soils which so bountifully supply the wants of man.

(5.) The last, and perhaps the greatest reason which we mention re, for the study of these plants, is the well known injurious quali- s and habits of some of them. Some are rank poison to man and asts; some cause disease and often death by their attacks, as parasites, ile myriads of the parasitic type prey upon our choicest fruits, veg- ables and trees. So true is this, that the very name of fungus suggests to us misfortune and calamity—destruction before our eyes, while we stand with our hands in our pockets, with woe-begone faces, resigned to our fate. Neither is the feeling a mere superstition. Indeed, it is probable that where we suspicion one of these parasites with evil, a score of them are busily, and steadily, and vigorously, and maliciously, and successfully intent upon their work of destruction.

These, then, are some of the facts in the history of our flowerless plants, and these characters, good and bad, when investigated, partially answer the question, "What are their uses, and why call attention to them?"

Flowerless plants are divided into orders, as follows: Lycopodiaceæ, Marsileaceæ, Equisetaceæ, Filices, Musci, Hepaticæ, Characeæ, Lichens, Fungi and Algæ; and these orders are more or less subdivided by different authors. For this paper, which does not pretend to be an exhaustive treatise, these divisions are exact, and full enough for our purpose.

The Lycopodiaceæ, or club-mosses, as they are called, are moss-like plants, having a woody stem and branches, some of them almost exactly resembling, in minature, pine trees. They scarcely exceed a hight of three inches with us, but in tropical countries are much larger. In the past geological ages they grew to immense size, and are now represented by the Sigillaria, Stigmaria and Lepidodendron of the coal fields.

It may as well be said here that the seed-like bodies in all the Cryptogamia are called *spores*, and the inclosing case a *sporangium*; the organ corresponding to the pistil of flowering plants, a pistilidium or archigonium, and to the anther (the pollen-sack) an atheridium. The names are changed, for the function and structure of the parts are not the same as in flowering plants. Thus a spore is a minute body, having no embryo or rudimentary plant, as have all true seeds, but begins germination at any point of its surface. Again, a seed gives rise directly to a plant, which we shall see is not always the case with the spore.

The fruit of the Lycopods is borne in the axils of the leaves. If we examine carefully we shall find a little rounded sack filled with four spores, and other little sacks filled with an immense number of exceedingly minute particles, that rise in a little cloud of dust when disturbed. Under the microscope these will be recognized as single cells, each having coiled, within, a peculiar thread-like body, which first escapes by the bursting of the cell membrane, and exhibits the wonderful phenomena of an active stage of the plant. Its motions are rapid and evidently self-caused. This is the spermatozoïd, and has for its office the fertilization of the spore. It thus corresponds then to the pollen in flowering plants. This powder is very inflammable, and has been used in theatrical performances to produce artificial lightning. It is also sometimes used by druggists as a coating for pills. In germinating, the spore forms within itself a little cellular substance, known as a prothallus. Upon this the archigonium is formed, which, when fertilized by the spermatoid, reproduces the plant. Some of the Lycopods are quite ornamental, and are favorite pets of many, the arts of man having changed their forms very greatly. But little value is attached to the order, though undoubtedly they are the highest in rank among the Cryptogamia.

The Marsileaceæ consists of a few aquatic plants formed in ditches and streams of sluggish water. Their fruit is like the Lycopods, but they have one instead of four spores. They are of no known specific use, but are certainly harmless.

The Equisetaceæ are the horsetails, or scouring rushes, which we so often see in low grounds. They have hollow stems, the joints of which are easily separated. Upon the top of the stem is a cone-shaped body, bearing upon its surface little stalked scales, diminutive umbrellas, upon the inner side of which the sporangia, containing many spores, are situated. The outer-covering of the spore splits up into four long arm-like pieces, retaining hold of the spore by one end, and developing upon the other a rounded knob. These arms will be found either tightly wrapped around the spore, or extended, according to the state of the atmosphere. Germination is the same as in the Lycopods, save that the prothallus protrudes from the spore, and develops both the archigonium and the antheridium, the latter producing spiral spermatozoids. The plants are of little use, neither need we fear their depredations.

The Filices are ferns, with which, I suppose, we are all more or less acquainted. They grow abundantly in damp woods, shooting up their large, green, variously figured fronds (leaves), which bear upon their backs little brown dots. The latter are clusters of sporangia, each containing many spores. Their germination and reproduction are like the Equisetaceæ. Ferns are very ornamental and often thrive where other plants fail. They must have a moist atmosphere, but otherwise are easily accommodated. Some of the thickened roots have been used for food, but furnish very little in this respect. Others are still popular in medicine. In tropical countries the ordinary prostrate root stock rises above ground to the size of trees, and good evidence is not wanting of their great size, in past geological ages. Very many species of ferns are now found in the fossil state. If not friends, the ferns are surely not enemies to man.

The next order, Musci, contains the mosses, a name sometimes made to include all of these little green plants. The true mosses, however, may be known by always having a distinct stem and leaves, without woody tissue in either. They are harmless plants, drawing their nourishment from the air, and, by their decay, ultimately furnishing a soil for higher plants. Peat is principally formed from mosses. The still spermatozoids, in these and the remaining plants, are not spiral, but manifest the same intensity of motion. The spores are borne in little stalked sporangia, arising from a rosette of leaves. The Esquimaux use the dried rootlets for lamp-wicks, and considerable use is now made of moss as packing material.

The Hepaticæ, or Liverworts, are usually flat, loose-tissued plants growing upon moist rocks, trunks of trees, and upon the ground. They send out many rootlets from their under surface, but use them simply as hold-fasts, drawing their nourishment from the air. Their fruit is similar to that of mosses, but the stalks to the sporangia are often wanting. Unlike the mosses, the sporangia bursts irregularly. The plants are of no prominent use and do no special injury.

The Characeæ contain a few aquatic plants, composed of tubes, and only noted for the facility they give for studying the circulation of the fluid contents of the cells.

The Lichens include the tufted or leathery plants found in dry places upon the bark of trees, old rails, rocks, etc. They vary greatly in form and color, sometimes consisting of little cups containing variously colored spores or gemma (buds), and sometimes radiating from a center into a large patch of green. The spores are found in little sacks contained in the walls of little cup-like bodies variously scattered over the surface. Their tenacity of life is truly wonderful. When dried so that they may be crumbled to powder, they only need a fresh supply of moisture to assume all the activity of life. Many are used for food. The so-called Reindeer-moss has been elsewhere alluded to. It is a true Lichen. Lecanora esculenta, found in Asia and Africa, consisting of a round moss, without attachment to anything, and often blown about by the winds, has been thought to be the ancient manna. Quite a number are used in medicine, and more, perhaps, in the arts. The coloring matters known as orchil and cudbear, are from Lichens, and from the various species of Rocella is manufactured the litmus, important to the chemist. A sample of the crude plant from Sicily was pronounced worth $20,000 per ton.

Now, we come, in order, to the most noted as well as the most infamous of the class—the Fungi; but as we want to speak more in detail about these, we skip them for the present, and notice the Algæ. These are aquatic plants of tender structure, but of wondrous variety of form and color. Some are totally invisible to the naked eye except in masses, while others, as the sea-weeds, extend a half mile in length. Our aquatic flowerless plants almost all belong to this order. In fresh water they are usually green. Some species flourish in running streams, other only in stagnant water. They obtain their nourishment from the water, and in their growing state are eminently serviceable to man by depriving the water of noxious gases. The green scum upon water may show that the latter is unfitted for our use, but not because of the vegetable moss, for this is acting all the time as a purifier. It may, and probably does often happen, that they become harmful when the waters in which they grew subside and leave them to decay. Some have, also, a bad name as parasites, living in the fluids of the human and other bodies, causing disease and death, but many of these supposed species of Algæ are now known to be peculiar forms of Fungi, and the time may come when all of these injurious forms will be included under the latter order. If so, it leaves one only, out of the ten orders of flowerless plants, that is injurious to man.

Returning, now, to the Fungi, we find many things which widely separate them from most other plants. They are never green. Most of them are white or hyaline, while others pass through the whole series of shades, green excepted. They are parasitic, either getting their nourishment from living plants and animals, or from decaying organic substances. Their vegetative system consists of numerous thread-like cells, often matted or flocose. These threads are called the *mycellium*. The fruiting bodies may be large as in the mushroom, seeming to constitute the entire plant, or may be very small, as in many moulds. Sweden is said to produce the most species* of Fungi, and the United States next.

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* SPORES NAKED.—Hymenomycetes—Hymenium free, open, sometimes closed at first, but soon open; Mushroom, Polyporus, etc. Gasteromycetes—Inclosed puff-ball. Coniomycetes, (Dust Fungi)—Spores seated on inconspicuous threads. Puccinia graminis, Æcidium, Conidia, Stylospores, Spermatia, Ascospores, Hyphomycetes—Moulds, spores free, cheese, silk, meal, sugar, etc.

SPORES IN SACKS.—Yeast (Penicillium glaucum)—Botrytis or Peronospora. Physomycetes, Sporangia from threads—Moulds on decaying matter. Ascomycetes, Sporangia from a hymenium—Eusyphæ Berberry. Morels and Truffles, Burning forests—Codyceps and Spæriæ.

Much study has been bestowed upon these plants, and very many interesting facts observed. Owing to their injurious habits, they have been looked upon as the vandals of the vegetable world. They are outcasts from good vegetable society; among plants they are the fallen angels, wicked and fiendish, plotting for the ruin of the world. But their work is not wholly destructive. Their office as scavengers has been mentioned before, and in this we find their best service to man. The mushroom, morrel, etc., are largely used for food. Mylitta Australis forms the native bread of the Australians, and a Cittaria, growing upon the twigs of trees, is one of the staple articles of food to the Fuegians. The list of good qualities is, however, short, and we turn to the more popular if not more pleasing task of berating and denouncing them. Some species of mushroom, like plants, are very poisonous, as the ergot of rye is well known to be. Another, similar to the mushroom, is used by the inhabitants of Kamtschatka instead of, or with whisky, for the purpose of producing intoxication, which it does effectually. Moulds upon articles of food are either very unwholesome in themselves, or induce an unwholesome state in the substance. Neither is the effect entirely avoided by scraping off the mouldy surface, for, quite invisible, the mycelium often penetrates to great depths, and spreads itself far and wide.

Whether Fungi produce disease in plants and animals *directly*, or are themselves only a *result* of disease, is a question often asked and variously answered. Some observers hold one and some the other opinion to this day; but the truth undoubtedly lies between them. Some species are positively known to attack, without scruple, the healthiest living tissues. With these, all that is required for their propagation is to scatter the spores upon the surface usually attacked. Many species have been tried upon both plants and animals, with the result mentioned. Smut in wheat can be readily induced by sowing the spores with the grain. Many leaf-blights can be more directly traced to the germinating spores. Muscardine, the silk-worm malady, can as certainly be produced by dropping the spores of a mould upon the outside of the body of the caterpillar, as a crop of corn can be produced by placing the seed in suitable soil.

But it may be asked, "How can the germinating thread from the spore, or the latter body, itself gain entrance to the tissues upon which it preys?" As a rule, the spores themselves do not gain such admission, but when we consider the immense force exerted by other germinating seeds, pushing up lumps of earth, many times their own bulk and then think of the delicate cell walls of most plants, and the loose structure of many animals, we may form some conception of a possible mode of procedure.

Some species, doubtless, prey only upon weak or diseased structures, yet these, by once gaining a start, so decompose the matrix and poison the fluids that the otherwise local injury, or disease, becomes general, involving the whole in as speedy death as in the former case. But the spores are not the only part of these plants which propagate them. All Fungi increase by division of the mycelium. In the cultivation of the mushroom the mycelium threads are made to penetrate prepared earth, which is afterwards cut into so-called wicks, and bits of these, though dry, are planted as seeds. So, too, the least particle of sap, or solid matter, from a tree, attacked by a fungus, may contain a sufficient quantity of the latter to communicate the disease to a healthy tree.

The Fungi vary greatly in size, from two feet in diameter to the minuteness of as near nothing as anything material can be. The microscope itself often fails to bring them into visibility; but with all difference in size the spores are invariably small. The cloud of dust issuing from a disturbed puff-ball is made up of minute rounded spores and particles of the cellular tissue. I have attempted to count the number of these spores, caught upon the moistened surface of a piece of glass an inch square, by holding it a moment in the fumes escaping from one of these mimic volcanoes, but the leaves in the forest, or the sand on the shore, might as well be counted. Mr. Cooke, in his book entitled Microscpic Fungi, estimates the number of spores, each of which he considers capable of reproducing the fungus plant produced upon a single diseased leaf, at 500,000,000. Now if one should be counted every second of time, for ten hours per day, and for three hundred days in the year, it would require something over forty-six years of labor to finish the task—a job I am not at all anxious to undertake. Nor is this all, for, as we shall see hereafter, there is more than one kind of seed-like bodies in the Fungi, and in this case the germination of each spore gave rise, not directly to a plant, but to several other smaller spores, so we must multiply our number by four or five to find the true number of vitalized germs, upon our poor besieged leaf. Many of the Fungi produce spores, of which it would require 100,000, laid *end* to *end*, to measure an inch, but some are much larger. They easily float in the air. I should, indeed, be surprised if proper examination did not find them, at times, at least in every place tried. Over the water and over the land, up the mountain steeps, and down the cavern's rugged walls, no place is so inaccessible they cannot climb, no place so secret they may not enter. Some are exceedingly tenacious of life. The spores of a mould, which some years ago affected the bread in Paris, were not killed by subjecting them to the temperature of boiling water.

Others seem to withstand any degree of cold, but some are easily destroyed. Probably nothing is so generally fatal as dryness. All Fungi love darkness and moisture, while by far the greater number thrive only in a warm temperature. Continued darkness would kill all known vegetation, Fungi excepted. Blot out the light of the sun, and retain the heat, and all green plants would perish, while the Fungi would riot upon their decaying masses. Hence, Fungi are far more prolific in damp summers than in dry ones, and in wet days than those full of sunshine. The granular substance, which gives plants in general their green color, is essential in the elaboration of inorganic materials, and, though this color sometimes gives way to shades of red, yellow, etc., with probably a loss of assimilating power, no known kind of white vegetation can elaborate food for itself out of earthy or atmospheric materials. Yet this is the condition of very many Fungi. As was said before they are nearly always white in their vegetating state, and are never a true vegetable green. They are therefore compelled to depend upon animals, or other plants, for food, a thing which they do not in the least seem to regret, neither are they over-modest about helping themselves. The whole hosts of Fungi are parasites, either consuming directly the juices of plants or animals, or living upon decaying organic substances. The mildews of the grape and gooseberry, and the rusts upon grains are examples of the former class, and the mushroom and toadstool of the latter.

Though flourishing only with moisture, Fungi are seldom and perhaps never truly aquatic. When submerged they seem to lose the power of producing spores, but a few species rapidly increase by cell division, in water or other fluids. Yeast is well-known to be such a fungus, and the vinegar plant is another, if not the same one. Fermentation is largely due to the action of Fungi. Milk is soured by the aquatic form of a mould; the vegetable juices are turned into wine by a fungus. He who drinks beer is sure to swallow more or less of a fungus plant. The decay of wood is often caused or accelerated by the penetrating mycelium of Fungi. The putrefaction of animal substance is supposed to be due to kinds of living organisms called vibriones, which have been classed with the animal kingdom, but which are in all probability plants. There is much obscurity here and more study is needed to clear up this most interesting point. Whether the bad odor from decaying substances is due to a liberation of gases by the respiration of these minute forms, or whether they come from their excrement, or from their dead bodies, or from any of these, is not now known, but we may confidently believe that the time is not distant when much that is now obscure will be made plain, and processes of development and of action will be found governed by fixed laws, and in a measure under the control of man. It is already well-known that Fungi are disorganizers. In a solution of sugar they liberate carbonic acid and form alcohol; this in time, by a similar process, they convert into vinegar, and the vinegar at last into water. And all this is probably caused by one species of plant, though assuming very different forms. In one form it is yeast, consisting of a simple chain of cells; in another is the beer fungus, consisting of minute threads, with the ends becoming septate or partitioned, each part to be finally thrown off as a reproductive body; in another form it is the vinegar plant, forming a thick, matted coat upon the surface; and finally it is a common mould, well-known to the micologist under the name of *Penicillium glaucum*. But through all these forms its action has been the same: a continued reduction of the compound to the simpler elements. Now let us turn to the action of Fungi upon other plants. We are well aware that the elaborated sap of our ordinary plants is little else than a solution of sugar. Indeed, in certain stages of this sap, all we have to do with it is to evaporate the water to find the pure sugar, and, as in the corn, we know that the sweet juice of the green stalk is stored away in the grain as starch, and when we further remember that yeast acts as readily upon starch as upon sugar, we find we have in this sap of plants, whatever its particular condition, the very elements of food for our parasitic fungus. There is one thing alone which may, and undoubtedly very often does, prevent the action of the fungus. The green-leafed plant has taken the simple chemical elements from the soil and the air, and, by the aid of sunlight, its peculiar *power* has organized these elements for its own use. This mysterious life-power has accomplished its work in direct opposition to the ordinary workings of chemical laws, and the same wondrous and potent influence will continue to manifest itself until something stronger crosses the pathway of its progress. Then, and not till then, the vital function yields, giving over its accumulated wealth to the spoils of another vital, but directly opposite, acting force. This is the warfare which I believe is continually raging between the common useful plants and the Fungi. And as the constitutional vigor of the individuals of each class varies, so will the result be. Some kinds of flowering plants may, always, in all times and under all conditions, while living, prove too strong for any Fungi to cope successfully with them; but the moment vitality ceases, the parasites run riot through the accumulated products. Others, especially under unfavorable circumstances for themselves, and favorable for their foes, are easily conquered, even in the midst of active vegetation. It is certainly too late in the day to suppose that Fungi cannot attack and destroy healthy living structures. Some species do not even wait for specially favorable circumstances, but accomplish their destructive work under all ordinary conditions. Other and numerous species are entirely confined to dead matter.

In the absence of positive knowledge, I theoretically account for the destructive effect of many Fungi, by assuming that they change the character of the sap, as a solution of sugar is changed into alcohol, etc., and at the same time robbing the elaborated fluid of its peculiar vitality, acquired by its digestion in the leaves. With this view it is not necessary that the Fungi should penetrate the whole structure of the plant. It is sufficient that the parasite gains access to any part of the plant through which the fluids are passing. If this is only in a particular spot of the body of a branch, the whole limb may perish, every leaf wither, without a trace of the fungus itself ever approaching them. And I think any one who has carefully examined the blighted limbs of the pear and apple will be inclined to come to some such opinion. Certainly no forms of fungus can be found in many parts of the affected branches. Yet we must remember that it is positively known, that the mycelium often ramifies itself through the tissues of plants, and may in some cases spread over large areas. I can not believe that the parasitic plants spread from a given center, or nidus, if you choose to call it such, in vegetable organism, in any other way than by mechanical rupture of the cell walls. The spores can not possibly pass with the fluid through the cell walls, neither could any other solid, however small, if still visible with our best microscopes, for these have failed to detect the least opening where the sap is known to pass through.

As for the fungus passing through in a fluid condition, and reproducing itself afterward, if any choose to believe it, let them. I am incredulous. In the animal system the transportation of spores, or vegetable bits of the mycelium, would not be so difficult, provided they once gained access to the blood.

But many Fungi, growing upon living plants and animals, do not seem to be further destructive, than in mere robbery. They live upon the elaborated juices, but leave intact what they do not consume

These, unless greatly multiplied, are comparatively harmless. Such is the curious yellow fungus ball upon the red cedar, the mycelium being perennial. Such, too, is the blackberry fungus, and a host of similar leaf productions.

What we want, then, is a profound knowledge of the laws of vegetable growth in general, and of the habits of individual plants, flowering and flowerless, in particular. If a particular species of Fungi can only prey upon another plant, when weakened or in some way diseased, then our protection will be in keeping the latter in a healthy state. This seems to be the case with the pear. We well know that overfeeding, both in plants and animals, tends to impair the vital functions. A petted, pampered animal is the first to succumb to disease, and a plant from the hot-bed perishes alone by the side of its neglected but surviving companion. If such is the case then when we fear the fungoid diseases, wisdom will teach us to avoid manure and high culture with plants, and rich, excessive feeding with animals. Excessive and ill-timed pruning of trees will undoubtedly give aid and comfort to the enemy, and the perpetrator ought to suffer the consequences. At the same time any affected parts of trees or plants, of any kind, should be promptly removed and burned, both to kill the fungus, and to prevent the vitiated sap from mingling with other parts. Sulphur and its compounds seem to be universally destructive to Fungi, and lime has proved itself an efficient antidote. There are many other substances which really kill the parasites when they can be applied, but the difficulty attending this operation will usually prevent the application. Seed wheat can be cleansed of smut with brine, and as this fungus is known to begin in the seed, its attacks can be prevented; but the case is different with the wheat rust, for the attack is apparently made upon the growing stem. Sulphur sprinkled over the leaves of the vine has been found useful as a preventive, but not a cure for the grape rot. But with our present information, I am inclined to the opinion that all the acids, alkalies, and whatnots we can bring to bear will be of really little service. Protection will be secured, if at all, by a careful selection of varieties, and a judicious treatment of the plants. With these, the future is as safe as the past has been, for there are no more parasitic plants now than there was in the good old days gone by, save as we have given them better facilities of growth, neither are their habits more destructive to-day than they were years before the microscope had revealed their true nature. The balance of power has not passed over to the destroyer. This hue and cry after the thieves is only an indication of our own vigils, and is the first promise of vengeance to come.

TRIAL OF IMPLEMENTS.

The following report gives the result of a trial of Implements made on the University Farm in June, 1871, a precedent which, it is hoped and anticipated, will be followed by more work in the same direction:

UNIVERSITY FARM, *June* 15, 1871.

To the Corresponding Secretary of the Industrial University :

At the request of Prof. T. J. Burrill, a number of farmers met for the purpose of examining and testing several corn cultivators and other implements for stirring the soil. The undersigned were selected a committee to examine the implements and to report to the University the result of their investigations.

In accordance with this arrangement of the farmers present, we respectfully submit the following report.

Before proceeding to the examination, we agreed upon a scale of points, as follows:

No. 1. Quality of work.. [illegible]
No. 2. Ease of management.. [illegible]
No. 3. Adjustability... [illegible]
No. 4. Capacity for working crooked rows............................. [illegible]
No. 5. Durability.. [illegible]

Total.. [illegible]

WALKING CULTIVATORS.

(Cost at depot, $35 each.)

PRAIRIE QUEEN—Made by Messrs. Peabody & Ayres, Champaign.

No. 1, 20; No. 2, 20; No. 3, 18; No. 4, 20; No. 5, 18. **Total,** [illegible]

CORN DODGER—Made by Messrs. Mitchell, Harper & Co., El Paso, Illinois.

No. 1, 18; No. 2, 20; No. 3, 18; No. 4, 20; No. 5, 18. **Total,** [illegible]

DEERE—Made by John Deere & Co., Moline, Illinois.

No. 1, 18; No. 2, 20; No. 3, 18; No. 4, 20; No. 5, 18. **Total,** [illegible]

Champion—Made by Messrs. Gilman, King & Hamilton, Ottawa, Illinois.

No. 1, 18; No. 2, 20; No. 3, 18; No. 4, 18; No. 5, 18. Total, 92.

Wier—Made by W. S. Wier & Co., Monmouth, Illinois.

No. 1, 20; No. 2, 20; No. 3, 16; No. 4. 18; No. 5, 16. Total, 90.

RIDING CULTIVATOR.

(Cost, $55.)

Bertrand & Same—Made by Messrs. Bertrand & Same, Rockford, Illinois.

No. 1, 10; No. 2, 20; No. 3, 18; No. 4, 10; No, 5, 18. Total, 76.

The committee would here remark that it may be seen, from the above figures, that it was no easy task to decide which was the best implement, when all were so excellent, nor were the members quite unanimous on two or three points, but fully so on all others.

As regards the Riding Cultivator, the committee would desire to call attention to the fact that its chief value is in its use for invalids, boys and persons who cannot do a day's work when compelled to walk. That this class of implements can be made to do as good work as the walkers, is quite possible, but the committee have not seen this point reached as yet.

THE THOMAS SMOOTHING HARROW.

This was tested also, and we think will never find a place of usefulness in our corn fields. In very clean land it might be of little value as a pulverizer, but among stalks and clods it would be worse than useless. In short it has no real merit as compared to a common harrow, field roller or plank drag, for use in preparing or cultivating the oil for corn.

BAKEWELL'S IMPROVED HARROW WITH CULTIVATOR ATTACHMENT.

This implement is only designed for use in the early stages of cul- ure. When the surface is rough and uneven in consequence of im- erfect preparation of the land, we should judge that it might be useful.

HARPER'S HARROW ATTACHMENT.

The above implement was tested on the Corn Dodger Cultivator, by aking off the cultivator teeth, but it is adapted to all cultivators.

The same general remarks apply to this as to the above harrow; seful only in the early stages of culture, with the additional value of he latter to break the crust in case of heavy rain storms, for the purpose of ærating the soil. The former is a valuable field harrow, and for many purposes the cultivator attachment will be found useful.

The land on which the trial was made was in fine condition, with almost straight rows, having been planted with "Haworth's Check-Row Planter." The rows were worked at right angles to the time of dropping, and also diagonally. Had the land been in bad condition, and the test more exacting, the result might have been different; but good farming does not require a cultivator adapted to rough surfaces, and no such test is desired.

J. J. BOGARDUS,
J. G. CLARK,
M. L. DUNLAP,
Committee.

CONVENTION OF FRIENDS OF AGRICULTURAL EDUCATION.

In accordance with the call of a circular issued after correspondence with persons interested in the Agricultural Colleges founded on the national grant of lands, a convention was held at Chicago, on the 24th and 25th of August, 1871.

In view of the interest manifested in this meeting, and its objects, by practical and scientific educators and others throughout the country, it has seemed desirable to place its discussions, although informal, and somewhat crude, in a more permanent form; and to add the correspondence of gentlemen unable to attend, and an editorial from the "New York Tribune" of September 6th, 1871.

CIRCULAR:

To the Friends of Agricultural Education:

After correspondence with those more immediately interested, it has
een decided to call a convention of Presidents of Agricultural Col-
eges, Professors of Agriculture, or other persons in the United States
r British Provinces who are engaged or interested in promoting the
rt or science of Agriculture by experiments in the field or laboratory,
r the purpose of organizing, consulting and co-operating in the great
ork of advancing the cause of Agricultural knowledge and education,
specially by experimentation with similar crops under similar condi-
ons, at all the Agricultural Colleges.

Accordingly a meeting will be held, commencing on Thursday,
ugust 24th, at 10 o'clock, A. M., in one of the halls in The Prairie
armer Building, 112 Monroe street, in the City of Chicago, at which
e attendance of all interested, but especially of the representatives of
e Agricultural Colleges of the country, is earnestly invited.

Papers upon various topics related to the objects of the meeting are
pected from several gentlemen, and are solicited from all who have
y suggestions to make thereon.

This meeting is called with the approval of the following gentlemen, most of whom expect to be present:

T. C. Abbot, President of the Michigan State Agricultural College.

Manly Miles, Professor of Practical Agriculture, Michigan Agricultural College.

J. M. Gregory, Regent of the Illinois Industrial University.

W. C. Flagg, Secretary of the Board of Trustees Illinois Industrial University.

W. W. Daniels, Professor of Agriculture University of Wisconsin.

A. S. Welch, President Iowa State Agricultural College.

Wm. W. Folwell, President University of Minnesota.

Joseph Denison, President Kansas State Agricultural College.

J. B. Bowman, Regent of Kentucky University.

W. S. Clark, President of the Massachusetts Agricultural College.

Wm. H. Brewer, Professor of Agriculture Sheffield Scientific School of Yale College.

Geo. C. Swallow, Professor of Agriculture University of the State of Missouri.

Hunter Nicholson, Professor of Agriculture East Tennessee University.

Hon. John Carling, Commissioner of Agriculture, Province of Ontario.

Prof. Buckland, Toronto University.

Hon. Horace Capron, late Commissioner of Agriculture.

Andrew D. White, President of Cornell University.

PROCEEDINGS OF CONVENTION.

In accordance with the call of a circular, published throughout the country, the following gentlemen convened in one of the halls in The Prairie Farmer Building, on Thursday, August 24th, 1871, at 10 A. M.:

1. Dr. J. M. Gregory, Champaign, Illinois, Regent of the Illinois Industrial University.
2. Dr. Manly Miles, Lansing, Michigan, Professor of Practical Agriculture Michigan Agricultural College.
3. Dr. Joseph Denison, Manhattan, Kansas, President Kansas Agricultural College.
4. D. C. Gilman, New Haven, Connecticut, Professor of Physical Geography and History Sheffield Scientific School.
5. Professor A. N. Prentiss, Ithaca, New York, Chair of Botany and Horticulture Cornell University.
6. John Hamilton, Agricultural College P. O., Pennsylvania, Professor of Agriculture Pennsylvania Agricultural College.
7. E. W. Hilgard, Oxford, Mississippi, Professor of Chemistry University of Mississippi.
8. G. C. Swallow, Columbia, Missouri, Professor of Agriculture University of Missouri.
9. Dr. E. S. Hull, Alton, Illinois, Lecturer on Vegetable Physiology and Fruit Growing Illinois Industrial University.

10. W. W. Daniels, Madison, Wisconsin, Professor of Agriculture and Analytical Chemistry University of Wisconsin.

11. Rev. R. D. Parker, Manhattan, Kansas, Secretary of the Board of Regents Kansas Agricultural College.

12. W. W. Folwell, St. Anthony, Minnesota, President University of Minnesota.

13. S. H. Peabody, Amherst, Massachusetts, Professor in Massachusetts Agricultural College.

14. A. S. Welch, Ames, Iowa, President of Iowa Agricultural College.

15. I. H. Roberts, Ames, Iowa, Farm Superintendent of Iowa Agricultural College.

16. W. W. McAfee, Madison, Wisconsin, Farm Superintendent of Wisconsin University.

17. W. C. Flagg, Moro, Illinois, Corresponding Secretary Board of Trustees Illinois Industrial University.

18. Edward Snyder, Champaign, Illinois, Professor of Military Tactics, &c., Illinois Industrial College.

19. Dr. H. J. Detmers, Champaign, Illinois, Lecturer on Veterinary Science Illinois Industrial University.

20. H. D. Emery, Chicago, Illinois, Editor "Prairie Farmer."

21. W. W. Corbett, Chicago, Illinois, Editor "Prairie Farmer."

22. G. E. Morrow, Madison, Wisconsin, Editor "Western Farmer."

23. T. H. Glenn, Chicago, Illinois, Editor "Western Rural."

24. Julius Silversmith, Chicago, Illinois, Editor "Amerikanischler Farmer."

25. C. W. Murtfeldt, St. Louis, Missouri, Secretary Missouri State Board of Agriculture.

26. Milton George, Chicago, Illinois, Editor "Western Rural."

27. Edward Young, Joliet, Illinois.

28. Mansfield Young, Joliet, Illinois.

29. William Watkins, Joliet, Illinois.

TEMPORARY ORGANIZATION.

Dr. Miles, Professor of Agriculture in Michigan College, called the meeting to order, and nominated Dr. Gregory, Regent of Illinois Industrial University, as Chairman *pro tem.*

Dr. Gregory said that this Convention represented an interest never before represented in a like manner in this country. Practical men like those there assembled, believed in deeds rather than words. If he apprehended the object of the convention, it was to deliberate about the peculiar duty, as practical scientific men, to whom vast public interests had been committed, about which great solicitude was felt. There were many things to be done about which the only light they had came to them from over the waters, consequently there were many changes to be made, and many new things to be attempted. To meet these claims, and to do their duty and fulfill the objects of the Congressional land grant, they desired a free and full discussion, and to secure co-operation, especially so as to Agricultural courses and Agricultural experiments. In this country the business was new and raw. To secure uniformity of proceeding in experiments and mutual understanding this Convention was called.

The Hon. W. C. Flagg was nominated as Secretary *pro tem.*, but at his urgent request his name was withdrawn, and Prof. Prentiss, of Cornell University, chosen.

COMMITTEES.

A motion to appoint a committee of three on Permanent Organization was carried, and Dr. E. S. Hull, Mr. Glenn, of the "Western Rural," and Prof. Daniels, of Wisconsin, were elected as such committee.

A motion to select a committee of five on Order of Business, resulted in the choice of Dr. Miles, of Michigan; Prof. Gilman, of Sheffield; W. C. Flagg, of Illinois; Prof. G. C. Swallow, of Missouri, and the Rev. R. D. Parker, Secretary of Kansas Agricultural College.

The question of how long the Convention would sit was sprung. Dr. Miles was willing to stay until the business which may come up was concluded.

Mr. Flagg moved that the Convention endeavor to conclude its business by to-morrow evening. This expression, offered as a motion, carried.

EXPERIENCE MEETING.

The Convention resolved itself into a sort of experience meeting.

Dr. Miles, of Michigan, was called upon, and spoke substantially as follows:

"Our College, as you all know, was started several years before the Congressional land grant act was passed, to aid in giving prominence to the practical Agricultural Department. My own experience has been with the practical, of which we have two distinct departments, the Horticultural and Agricultural. I have had charge of the latter for the last eight years. Our students are required to labor three hours per day; we do not think labor interferes with the studies, and generally the best students inside are also the best workers outside. We find great difficulty in conducting an Agricultural experiment satisfactorily, because it is difficult to get a proper standard of comparison; and also with animals; for instance, there is a great difference between old and young. We now place animals each by themselves; the animals which are not found in proper condition to assimilate food are thrown out.

"In our experiments, we have found that animals consume more food in the first stages than afterwards. We have about 400 acres. A large amount of work is done by the students. I should have stated above, that all our students work at the same time. We have however, men enough employed to carry on the farm independent of the labor of the students."

Prof. E. W. Hilgard, of Mississippi, being called on, said he had come here to get information, and, therefore, would ask of Prof. Miles: "Does your farm make lucrative returns, or is it an expense?"

Prof. Miles—It is not an object primarily to make the farm pay, but our's pays as well as other farms. We propose to carry on the farm operations economically, but do not farm for profit.

President Gregory—If you did not make any more than the ordinary expenditures of other farmers, would it pay as well?

Prof. Miles—Yes, certainly. There are a few things which we do not expect to pay, as, for instance, the keeping of male animals of different breeds, which must be kept pure, and can serve only a few females.

To the question as to how many of the graduates of Agricultural Colleges become, or rather remain, farmers, Dr. Miles said he could not answer the question very accurately, but he felt safe in saying nearly 75 per cent.

Prof. W. W. Folwell, of Minnesota University, said he had no report to make. Although the Agricultural Department had been opened technically, they had as yet done but little. They did have a good piece of land for an experimental farm, a good deal of hope, and some confidence.

Prof. D. C. Gilman, of the Sheffield Scientific School, of New Haven, Conn., in answer to a call, responded that that institution could not properly be called an Agricultural College, though they had two Professors of Agriculture and half as many students; that it was a distinct college, although a part of Yale. They had constantly recruited students from the farms, but were sending but few back; if they had any distinctive work it was to train up scientific men.

President Denison, of Kansas Agricultural College, said that Pennsylvania had much experience, and he therefore would call on Prof. Hamilton, from that State.

Prof. Hamilton said he did not like to go into detail at that stage of the meeting, but would do so at a future time. But, being urged to speak, he said that Pennsylvania had three model and experimental farms; one near Philadelphia, one near Pittsburgh, and one in Centre, where the college buildings are located. By this division, they secured a diversity of soil and climate. Each of these farms contained about one hundred acres. Thirty-five acres of each hundred were used for experimental purposes; the rest as a model farm, in the sense of elevating the general standard of farms. In order to provide the necessary stock, each farm had received as donations from citizens of Pennsylvania, about $5,000. The same experiments were carried on on each of the farms, and were carried on continually. There were about forty-four plats on which experiments in the rotation of crops were tried, including experiments with manures, domestic and commercial. Then they had another lot of plats, for grains, seeds, and vegetables, and another for forage plants for the soiling of stock. The students, seeing these experiments on one farm, saw all; but it was in contemplation to have all the students visit each farm.

To the question of how much labor was required of each student, Prof. H. answered by saying four hours every other day, or eight hours one week, and twelve the next. The freshmen and sophomore were the only classes that labored, students of a higher grade not working. They started out with the idea that labor was honorable, and that all should work three hours each day, but the Regents did not think the plan worked well. The students seemed to think that they were supporting the College, which could not be denied. They then agreed upon the present plan; the labor was not paid for, except when performed extra. The Professor seemed to think that much of the labor required at first, such as picking up thousands of four-horse loads of stone, was not very agreeable. The present system had been in force two years, and worked well. They kept hands enough to carry on the farm independent of the student labor. In answer to a question, he said students generally did not care for the animals, or to work with teams.

The question was asked: "Did the labor required of the students have any connection with their immediate studies?" He said: "Not so much as it ought to have."

President Denison, of Kansas, being called upon, said that new States and new institutions had but few experiments to report. He would say that they had had a fine opportunity to select lands. They had sold about one-half and had now an income of $20,000, which would still be increased. They had until recently, eighty acres of land with the College building, and enclosed by a stone wall, which cattle respected. The land had been increased to 415 acres. They hoped to devote a part of this to a nursery for fruit and forest trees, which would pay. Men and women were admitted, and thus far the women had been able to hold their own in the studies. They required one hour's labor per day of each student, male and female; if more was performed it was paid for. The Faculty numbered twelve professors.

PERMANENT ORGANIZATION.

The Committee on Permanent Organization presented the following list of officers:

President—Hon. J. M. Gregory, LL. D., President Illinois Industrial University.

Vice-Presidents—Dr. Manly Miles, Professor of Agriculture in the Michigan Agricultural College; Rev. Joseph Denison, D. D., President Kansas Agricultural College, and Professor D. C. Gilman, of the Sheffield Scientific School.

Secretaries—Professor A. N. Prentiss, Cornell University, and Professor John Hamilton, of the Agricultural College of Pennsylvania.

The officers were elected, after which the meeting adjourned until 2 o'clock.

AFTERNOON SESSION.

The Chairman—We were in the midst of reports. It is for the Convention to say whether they shall be continued.

Mr. Flagg—Mr. President our members are not all in yet, I believe, nd I would like to bring up a little matter while they are gathering, f in order—the question of arranging for continuing this organization n future years. Some of us had a plan under consideration of forming permanent organization, to meet from year to year, or oftener, for he purpose of continuing consultation, experimentation, and comparion of experimentation, and the continuous laying out of experiments o be performed in common—doing that much at least. Perhaps the rganization ought to go further. Perhaps it ought to be an organizaon of the Agricultural Colleges and the Technological Schools. I ant what would be best, and would like to bring before the meeting e question of continuing the organization in the future, and get an pinion upon it.

The Chairman—Will the Convention take any action on the matter f future permanent organization?

Mr. Hilgard—I would move it be referred to a committee.

The motion was carried.

The Chairman—I will appoint Prof. Hilgard, of Miss., Hon. Mr. lagg, of Ill., and President Folwell, of Minn.

The report of the Committee on Business will be in order if they are ready to report.

The Committee on Business submitted a report, naming the following for discussion this afternoon: "What experiments should the Agricultural Colleges try in common, and what should be the method of conducting them?"—Dr. Miles, of Michigan Agricultural College, to open the discussion. For this evening: "The relations of schools of applied science to one another and to other institutions."—Prof. Gilman, of the Sheffield Scientific School, to open the discussion.

On motion of Mr. Hilgard, the report was adopted.

The Chairman—According to the programme, the discussion of the experiments which may be made in common by the several institutions, will be opened by Dr. Miles.

WHAT EXPERIMENTS SHOULD THE AGRICULTURAL COLLEGES MAKE IN COMMON, AND WHAT SHOULD BE THE METHOD OF CONDUCTING THEM

Mr. President, and Gentlemen of the Convention:

The subject is a difficult one to present. The number of experiments that might be tried by the agricultural colleges, and those interested in agricultural improvement, is almost without end.

The programme provides for the discussion of the experiments that it would be desirable to conduct in common by the different institutions, and also the method of conducting them. In presenting this subject, I shall reverse the order and speak for awhile in regard to the method of conducting experiments, and the difficulties in the way of their prosecution.

Very often we speak of experiments for the promotion of agriculture in a very loose and indefinite manner. It seems to me desirable, on the start, to draw a line of distinction between those experiments which tend to improve the *science* of agriculture, and those which have for their object the improving of the *art*. Art is one thing, and science is another. Art has to do with practice; it has to do with the ways and means of accomplishing objects. Science has to do with the explanations of those processes which are made use of in the art. We may have a rule of practice in the art, derived from observation and experience. Science may step in and explain that rule. The rule, as such, has been developed experimentally; it has been developed empirically—that is, by a series of trials. The explanation of this rule constitutes the science. Science has nothing to do with the practical application, in its strict signification. Science has to do with causes and effects. It matters not to the scientific man what the pecuniary results are; but he is concerned simply in the changes taking place in the matter which he is investigating. Now, if we attempt to combine, or rather if we confuse these two terms in our experiments, we shall not meet with the success that we ought to expect from a systematic effort at improvement. Field experiments—experiments in the cultivation of different crops, the application of manures, analysis of soils, feeding of animals—all have to do with the art. We are simply making methodical hints for the sake of getting at rules to guide us practically. The scientific man may step in and make his investigation for the sole purpose of explaining these principles, or rules, which guide us in practice. Now, I apprehend at the present time no one can claim that we have any rules of practice that are derived from the teaching of science. I know of none in the art of agriculture. The rules of practice have been derived from experience and observation. The world of science has stepped in and explained these rules. The rule is of no more force in practice than it was before. It simply serves to suggest new lines of inquiry for future experiments. On the start it seems to me important that we make this clear distinction in regard to the experiments we would make.

In the next place I will speak briefly of some of the difficulties—I alluded briefly to that this forenoon—in the way of successful experimentation, and in this discussion I wish to be understood as limiting my remarks entirely to those experiments which we inaugurate for the purpose of improving our practice—experiments for the improvement of the art.

In the first place, we have a great variation of soils. Unfortunately they are variations we are not able to detect except by experimental trials—soils apparently similar, so far as their compositions are concerned, and so far as their physical characters are concerned, give very different results. In the experiments at the Michigan Agricultural College this was one of the most striking points brought out by our irst experiment. Ordinarily field experiments have been conducted by taking a single manured plat, and then comparing with it different plats to which had been applied different varieties of manure. The xperiment was supposed to be complete. The comparison of the unmanured plat with the manured plat would apparently give an indicaon of the result. But such experiments misled us. We found on uite a number of unmanured plats, on soils precisely alike, so far as we could judge of their character and composition, a very great difrence in yield. Peculiarities of climate and seasons will have much o do with varying the experiment, and this seems to be one reason why it would be desirable to try experiments at quite a number of different points, having all the conditions precisely alike, so far as we can, making the conditions that vary simply those of climate, soil, etc.

There is another difficulty in the way of conducting field experiments, which is exceedingly difficult to obviate, that is, the difference arising from variations in the cultivation. The time of the cultivation of each plat should be the same. Not only the same amount of labor should be expended on each plat, but that labor should be performed at the same time. From this you will see the difficulty of experiments on very large plats. If your plats are very extensive, and you have a large number of them, you cannot harvest them all at the same time. You cannot put in all the seed at the same time. Some two years ago at the Agricultural College we sowed a field of turnips. One-half of the field was sowed on the third of July, and the balance on the fourth, the seed being all from the same package, the same drill being used, and the same person running the drill. There was no difference in condition, so far as we could observe, except a slight shower in the intervening night, which would apparently give the advantage to the latest sowing. The result was that the turnips sowed the first day produced a very large crop; those sowed the second day were hardly worth harvesting. There were four or five times as many turnips from the field sowed the first day as those from that sowed the second day.

This shows that we should exercise great caution in regard to cultivation; that it should be uniform, not only as to amount, but as to the particular time of performing the labor. It is important that field crops subjected to experiment should be weighed at the same time. If you have a large number of plats, that are to be compared, and these plats are quite large, it must occupy considerable time. If so, there will be a difference in the amount of moisture, and this will vary the result. I had a striking illustration of it the present year, in the continuation of some experiments we started several years ago.

A field had been planted with corn for several years in succession, the plats all being treated alike. We found a great variation in the yield. Corn was put on the next year, and there was a great difference in the yield, but the plats that gave the largest yield the first year, did not give the largest yield the second year.

After this part of the plats were manured, and we followed on through a rotation of crops until we came to the clover crop, which was harvested this year. As soon as the crop was cut, we endeavored to put on sufficient force to do it in a short time. The clover was weighed green. It was then stirred up and exposed to the action of the wind and sun, and put up in cocks. The next day it was spread out again, and when it was supposed this crop was in a fine condition for going into the barn, the plats were weighed; but it was thought there might be some variation from this cause, and they were allowed to remain and afterwards weighed again. This second weighing it was thought to be dry enough to go into the barn, and not excessively dry afterwards. I give the results of the second and third weighing of the same plat:

SECOND WEIGHING—*Pounds.*—261, 84, 100½, 41, 251½, 119½, 211, 101, 165½, 93½.

THIRD WEIGHING—*Pounds.*—185½, 61, 68½, 30, 175, 88, 151, 73½, 121, 71.

It showed the manner in which we may be deceived by relying on our senses entirely.

You will readily perceive if we had a large number of plats, and they were of considerable size, you would get more difference in results if it was carried on in rotation, commencing on one side, and passing to the other side of the field. Guard against a difference in the results, arising from a difference in the amount of moisture in root crops as well as others. It has been shown by some experiments made, that where turnips, for instance, have been manured, there was a great increase in the yield, but when the amount of water in the turnips was taken into account, it was found the amount of dry substance was precisely the same. The great increase arising from the manure, was simply water—nothing more—and here is something that should be looked at.

In feeding of animals, there are a great many difficulties in the way of satisfactory experiment. One of the first I will mention is that which may be termed individual peculiarities of animals. You may take animals of the same age, and the same size, or as we have fed, pigs of the same litter, and we find one pig will give a much larger return for feed than another. It is something we cannot get at, cannot measure, cannot detect, except by the experimental test of feeding. Again, we find, as I mentioned this forenoon, when animals are first put up, they consume more feed in proportion to their weight than towards the close. We find they give a greater return for the feed consumed during the earlier stages of the feeding than afterwards.

What is the cause of the variation? I apprehend there are three causes, and two of them I have no doubt about The third, I am inclined to think, has an influence, yet it is an exceedingly difficult matter to determine. These peculiarities, or differences, are the age, the size and the ripeness. From the experiments we have already tried at the college, I have no doubt age has a very great influence on the result. The young animal seems to have an organization capable of deriving more nutritive material from the same feed, so that it gives a larger return for feed, other things being equal, than when it gets older. The ripeness of the animal has much to do with it. When the animal is in a moderate condition it will receive more nutrition from the food consumed than after it is excessively fat. The size of the animal perhaps has something to do with it. I am inclined to think it has, and you see we have a difficult problem to deal with to determine how much of this variation is owing to difference in age, how much to difference in size of the animals, and how much to this difference in ripeness. By ripeness, I mean the condition of the animal, as regards fat. The treatment of animals will have very much to do with the results. Animals that are carefully treated, and fed regularly, will give a larger return for food consumed, other things being equal, than those that are treated harshly, and kept in constant tumult from outside annoyances and interferences. The mental condition of the animal has undoubtedly very much to do with the progress it makes in feeding. We found when we were feeding sheep in the experimental pens in the sheep barns—this building being occupied by other sheep—they did not make as much progress as when fed by themselves, and they would fall away at once as soon as there was an unusual disturbance among the sheep, in the outside pens of the same building.

There is another matter that should be taken into consideration: this is the varying weights of animals, without apparent cause. If you weigh animals, at long intervals, you will undoubtedly find they are making very satisfactory progress from one weighing to another; but if you weigh them at short intervals, you will find they lose during one period, and gain the next. If you weigh them every day, you will find one day a loss, and the next day a gain, or perhaps two or three days of gain, and then a great loss. The progress made by the animal is an undulating line, and not a uniformly ascending line.

I do not know that I can give any satisfactory explanation of this variation in weights of animals, but I presume it is owing to a difference in the action of some of the secretory organs. It is probable their fluctuation in weight was owing to a loss of water in the animal rather than to a loss of dry substance, because where we find an animal has made a very great loss at one weighing, it will frequently make the least gain at the next weighing. If this loss in weight was owing to a defect in the animal, then we would suspect the animal was sick, or there was some derangement of the organs, and would not expect it to make such a rapid gain at the next weighing.

To obviate these difficulties and make our experiment satisfactory—that is, in order to accomplish the object of experimenting—it seems to me we should pay particular attention to several particulars, which I will enumerate. In the first place, the experiment should be as simple as possible. A large proportion of the experiments made thus far have been of no value, for the reason that too much was attempted. For instance, a person wishing to test the real value of potatoes of different sizes for seed, plants his small potatoes in drills two feet apart, and the large potatoes in rows three feet apart. Here, you see, is a double variation. There was no condition the same, and no chance to compare such experiments, and a very large proportion of experiments have been vitiated in this way. It arises from attempting to determine two things at once, that is, the effect of variation in size of the seed, and the effect of variation in the rows. You have two elements, and you may try experiments as long as you please without any valuable results. It would be better to try one experiment and settle the matter in regard to size, having all the conditions precisely the same, and then take as a separate experiment, one in which the different distances of the rows was the object of the investigation. In reference to this difficulty in regard to the variation of the soil, it would be necessary to have a large number of unmanured plats for comparison. The increase of the manured plats over the unmanured should be where the plats treated precisely alike.

I think it would be desirable also to put crops for two or three years in succession upon the same land before using it for experimental purposes. For instance, if you wish to test the value of manure as applied to soil, it would be better to mark out your plats accurately, and crop them for several years without any manure until you ascertain the peculiarities of this crop, and then continue the same crops with the addition of manure afterwards, but in this case at least one-half of the plats should be left unmanured for comparison, so that you may compare results alongside of the manured plats, and compare the plats with themselves, and also with the crops on the same plats the preceding years.

The question is often asked, what sized plats it is desirable to make in field experiments? That is a difficult question to answer. On some accounts it would be desirable to have the plats very small; on other accounts it would be desirable to have them of considerable size. Dr. Anderson states that he thinks the smaller plats are desirable; he would not have plats exceed 1-100 of an acre in area. Mr. J. B. Lawes, who is associated with Mr. Gilbert, in experiments conducted at Rothamstead, writes me he has no confidence in experiments made on plats of less than 1-20 of an acre. There are two high authorities. Dr. Anderson is an able chemist and a very successful experimenter. Lawes and Gilbert are perhaps the best agricultural experimenters we have had. Their experiments are not accurate, but taken on the whole, they are the best experiments that have been made. My own experience is, that a plat of from 1-100 to 1-20 of an acre should be the limits in size. The difficulties of the very small plats are, you are liable when you are manuring to have it extend its influence to the adjoining plats, and the roots of the plant will extend some distance into the soil, so that you are liable to be misled. When you come to weigh the produce of the plats, a very slight error will amount to considerable, when you make the calculation to ascertain the yield per acre; that is, the error in a single plat would be multiplied by 100 in getting the standard for an acre. In a small plat it requires very great accuracy in weighing, great accuracy in the division of the plat, and great care in the management of the experiment throughout. To obviate this objection that the roots run from one to another, I think it would be well to have space between the plats—a space of several feet left between these plats that are to be used for experimental purposes, and these spaces should be kept clean and free from weeds. But here comes another difficulty. Suppose you have plats laid out, and spaces of three feet between them, you must cultivate the spaces, and need to expend the same amount of cultivation on each one of the spaces, as on the other, so that the crop adjoining may be equally influenced. Again, the spaces should be weeded carefully at the same time, cultivated at the same time, and managed as carefully as the plats themselves, or you will vary the result in the plat.

The objection to the large plats I have already mentioned, but I will refer to it again. It is the difficulty of getting over a large area in a given time. If your plats are so large that it takes a whole day to go over them and perform the labor, you will be very liable to error from the variations mentioned.

Wires may be used for separating the plats, and that is a very convenient plan, and one we have practiced at the Agricultural College, but it does not obviate the objection that the roots pass from one to another. It enables you to make a fair division between two adjoining plats, which is exceedingly difficult—more so than a person wou think who has had no experience in the matter of making exact divisions through a crop of growing grain.

In the feeding of animals, I would be particular, as I mentioned, to have but a single animal in a pen. If I was going to feed twenty animals on a given feed, I would place each one in a pen by itself, and then would confine them to a single article of food. It would be an important matter to test the nature of corn meal, and corn prepared in different ways, as food for swine. The natural mode that would be suggested, conducting the experiment, would be to put a number of swine in a pen, and give four or five of them corn unground, four or five more of them cooked corn meal, and four or five more uncooked corn meal. But I apprehend the results of the experiment would be very unsatisfactory, to say the least. I would not like to place any very great amount of reliance on it. I would prefer to take the same number of hogs and put them in pens separately, and feed them with unground corn, and follow that up until I got the range of variation between the animals. Then I would take the same number and feed them corn meal, and if your arrangements are of sufficient extent, you may have these experiments going on at the same time. We have been feeding swine for a number of years, and have from ten to fifteen pens. We have fed nothing but raw meal thus far. The question is often asked, "Why don't you feed cooked meal?" I have not yet got the standard of comparison with raw meal, by which I can compare results with the cooked meal. There is a great range of variation in the animals, and there would be made a serious error in the experiment. This error has arisen very much from the force of circumstances. We could not get animals of uniform size and uniform ages to fill our farms, and for that reason, the attempt to do the two things which I have mentioned, is objectionable. There has been so much variation in this matter, that we need to have more experiments with cooked meal, and I would hardly know what to compare them with so far as raw meal is concerned. Notwithstanding the great variation, the rule I laid down holds almost uniformly; the greater increase of food consumed during the early stage, and the dissemination in the amount of fat, as the animals fatten. The animals for feeding should not only be of the same age, but they should be as near as possible of the same size, and of the same degree of fatness when they are put into the pen, in order to get a fair opportunity for comparison.

I do not wish to take up too much time on this, because I would like to hear from others. I have but one other suggestion to make in regard to the methods of conducting experiments, and that is the method of obtaining manures. The term manure is a very indefinite term. We take manure from our barn-yards at different times, and it will vary very much in quality. The value of manure will depend on feed consumed; that is a fact well settled.

It is impossible to make a chemical analysis so as to get the value of it. A chemist may take a quantity and tell you what there is in the sample, but he cannot analyze each load that you use. The method I would adopt is this, to take the animals and put them into a pen—into a box-stall—and would have it constructed tight, so there is no chance of losing any of the liquid constituents, and I would feed to the animals a definite amount of food; then I would take the results of these articles of food as we have them furnished by chemists in tables, as the measure of the value. Then take the manure from the box, and put it on the plat. By pursuing this method, you may get a number of boxes of precisely the same strength for all practical purposes.

In regard to the experiments which it would be desirable to try, I have mentioned but a few. There are many more that suggest themselves to me, and I speak of these simply for the reason that they seem to me as important as any, and for the further reason that I think they would be as easily tried as any. It does not seem to me best to attempt very complicated experiments at any particular institution until a long experience has been had in experimenting—until the person experimenting becomes thoroughly familiar with all the difficulties in the way. For the feed experiments I would simply try to ascertain the value of Indian corn in its different forms. After this is accomplished we may then take other grain in the same manner. After that I would take the grasses elsewhere. In these experiments it would be desirable to have the same conditions observed by all the experimenters, otherwise the experiments cannot be compared. If I feed corn meal in a particular way in Michigan, and it is fed a different way in Illinois, Missouri or Pennsylvania, we cannot compare results at all. You are not assisted in the one place by the investigations made in the other. The experiments must be conducted in all places precisely in the same manner, then you can compare results, bearing in mind that certain conditions which cannot be controlled may influence the result.

The next class of experiments I will suggest would be to determine the best methods of applying manure—the application of manure on the surface, and the application so that it may be plowed under; and it would be desirable, likewise, to make experiments with reference to the application of these manures at different seasons; whether it would be best to apply manure in the spring on the surface, or in the fall

This will be found to be a very complicated problem, and one that will require great caution. I would endeavor, likewise, to ascertain the value of commercial fertilizers as compared with barn-yard manures. You want to know the constituents of which the manure is composed and the fertilizer should be analyzed carefully. I have serious doubts of the propriety of farmers purchasing fertilizers. I have an idea they may be made cheaper by feeding animals. The barn-yard manure must be our staple manure for a long time. If we are to purchase other manure, we ought to have some means of knowing how it compares with this.

I would like to have experiments made showing the effects of change on the growing crops. In a system which has been tried, wheat has been grown for quite a number of years in succession, and a yield of from thirty to forty bushels obtained without any manure. The system is this: The field is divided into strips of three feet in width. The wheat is sowed on the alternate strips. The vacant strips are kept thoroughly pulverized during the season, and the next year the wheat is put on the strips left bare the year before.

It would be desirable likewise to ascertain the methods of seeding in corn, whether hills or drills would be desirable. These experiments all require a great deal of care and accuracy, and they will require a good deal of study in order to fix the conditions upon which they shall be tried by a large number of persons, so that the results may be compared.

Prof. Hamilton.—It seems to me that before we start out to experiment at all, we should understand one thing, and that is, that in this art of agriculture as it has been defined, aside from the science, no absolutely accurate result can be obtained from any experiment in the art of agriculture; that it is only by comparison—it is only relatively in their relation one to another, that they become of value. Crops may differ largely in weight, as to the times in which they are taken. It has been shown that after they have been considered perfectly dry, there is a difference in weight. This fact that they do differ in weight at different times, does not affect the experiment, because if they were weighed green, just as they were cut, and taken into the barn, it is the relation of these plats to one another, I think, that this would be found to be true in almost every case—as true as any portion of the experiment is. Every part of these experiments is attended with some error, and we wish to eliminate the error as far as possible, and in weighing of plants in that way—all of the plats at the same time or as soon as may be—we get a result that is almost correct; not absolutely correct, for no result we obtain is absolutely correct, and only correct results can be obtained by carrying on these experiments for a great number of years. The system of experimenting as it has been carried on, has been a failure, and is of no value inasmuch as they have been dropped after they have served a certain purpose; they have not been carried on persistently year after year, thereby developing a principle in agriculture, and not merely the curiosity of some person who is experimenting.

Now, in our experimenting for the Agricultural College in Pennsylvania, we have tried to avoid what the gentleman has clearly shown is an error we are apt to fall into, and become confused—that is, attempting two systems of culture, or putting in the same thing two objects. It cannot be done. We have failed on several plats for that very reason. The earlier experimenting was about a failure, just because we attempted to do too many things on the same grounds, and had more objects than one. There must be confined to each plat but a single object. If you have more you lose control of the experiment, and afterwards you have to experiment again to find out which of the two it is. Each plat, in any proposed plan, must be but a single experiment.

In regard to the size of these plats, it seems to me that the plan of having them so very small is one that probably is more liable to error than in having them large, although there are difficulties on the other hand; if your experiments are extended over a great deal of ground it is impossible, or almost impossible, to have them all carried along under the same conditions, but you can overcome that by going to extra expense. We try in all experiments to do this in one day, and in a portion of the day after the dew had gone from the earth, we try to get it as nearly in the same condition as possible, and if necessary hire extra help to insure this. There are accidents which happen—such as rains coming up—but those are things that no oversight can provide against. They do affect the experiment to some extent, but if these things are to be carried on for a succession of years, the probability is the next year one will be able to avoid this, and get such an average as will form a guide. The objection to the small plat has been stated: that if you make an error at all in weighing, or in the size of your plat, or in any particular, that is multiplied by just so many times as it is less than an acre, if you take that as a unit. If you take a larger piece, the multiplication of the error is not so great. We had some experience in the matter of small plats. One of our farms in Chester County, started before the one at the college, and before the one at the western part of the State, and they started some independent experimenting—sowing little plats of wheat of various varieties, and patches of one thing and another. It was found that these patches were very difficult to care for. Wherever we have small experiments the tendency is to increase the number, and it is scarcely possible to keep them all separate. The effect of that was that the superintendent, who was carrying on the experiments pretty much on his own hook, allowed his shocks of wheat of different varieties to stand in the field, and would thresh one and then another, taking several days in doing it, thereby occasioning greater error than would come in the having of large plats which were brought in and put in separate places in the barn, and not having so many of them. In regard to the way in which the plats should be laid out, I do not see exactly why the gentleman thinks it is necessary to cultivate between the plats. It seems to me, if the grass between the tiers of plats as an influence on one plat, it has that same influence on the other plat, and so the same influence goes on through the whole series of lats. There is the fact that we may use manure and we may not; in-smuch as this system of experiments is one that is only relatively ompared, the same thing would be true if the plats were cultivated. t would not bring in any greater error, probably, than if the plats vere cultivated. The keeping in mind of this one fact, that our results re only relative, I think clears up many of the objections. Also in he feeding of animals, this same thing holds good. I have only taken p the matters that have been suggested to me by the remarks of the entlemen here, and given my views upon them, as I understand that is the object. In this matter of feeding stock it seems to me if we ould place equal weights of stock in different pens—pigs for instance -instead of having a single one in the pen, if we could place a num-er in one pen, and then a number in another, that would give a better sult, because we divide up a greater amount of increase. When we me to show the effect the feeding has had upon the animals, we vide it up, having a greater number of pounds to go on, and we get more correct result in the division.

I believe this is all I have noted, to reply to. I think there are ree principles necessary to be kept in view, in instituting these ex-riments; that there are three grand divisions into which these ex-riments can be divided, one of which is to show the rotation of crops d method of culture. Those two are intimately united. They are ings that are of practical value to farmers. They wish to know these things—the methods of culture and the proper rotation of crops. This, I think, is a proper subject for agricultural experiments.

Another is the experiment in different varieties of grains, seeds and vegetables, showing which are best adapted to certain soils, the ways of developing and the varieties that suit certain methods of cultivation. The next is in testing the qualities of different manures. These three things are the great question of the day in agriculture.

Professor Daniels—The remarks of Dr. Miles, I presume, are much more to the point, than any I shall make, as my experience has been mostly under Dr. Miles. I suppose you wish me to state something of what we are doing in regard to experiments.

The Chairman—The topic which is before us, recommended by the Committee, is the experiments which may be tried in common, by the several institutions in the country, and the methods of trying them.

Professor Daniels—I have been very much interested in hearing the remarks that have been made, and I am sorry that I did not understand exactly the points they were reaching, the experiments which may be tried in common. But I would agree with both the gentlemen who have spoken, in this: that experimentation is difficult to carry on, and definite conclusions are difficult to reach, on account of the great number of things that are brought in and the great number of elements involved in the experiment. The weather, the different characters of the season, different condition and different processes as applied to the soil—all these things render it exceedingly difficult, and no absolute results can be obtained. But they must be relative as it has been stated. The experiments which can be carried on, and best carried on generally with uniform action through the colleges, are, I should think, such as have been stated; the feeding of stock and the general results that may be obtained from feeding stock in different. definite, prescribed ways, and also in the methods of culture, and in regard to varieties. In regard to varieties of our crops, perhaps nothing so absolute can be obtained, on account of the difference in the climatic conditions in the different portions of the country, in which the experiments have been conducted. Our experiments mostly have been these, so far: The comparison of the different varieties—for instance, a comparison of all the varieties of oats that we have, and all those which we could obtain—a comparison of the different varieties of potatoes and so forth. The testing of some varieties of winter wheat and spring wheat and different methods of culture, and especially some of the simple matters. But under the circumstances in which we are placed, with an income which is small, we have not been able to do so much, and the Agricultural Department is simply one department of the University. We cannot apply all our energies in one direction. We look more to institutions that have devoted their energies more especially to these matters, having more money to expend than we have had; but any series of experiments, however, that the Convention would recommend, we should be glad to carry out to the furthest extent possible.

Dr. Miles—I would like to make a remark or two, to correct a misapprehension, and draw out some further information. I understood Prof. Hamilton to say that although an experiment might be conducted carelessly, and the result not accurate, that if an average is taken in large numbers, it would give satisfactory results.

Prof. Hamilton—I did not mean to say "carelessly"—not by any means; but after as great care as possible has been exerted, the result is not correct, and the only way to get accurate results is to compare, and in the end get some law that is general and as near accurate as may be.

Dr. Miles—I understood you to say the experiments might be tried in a certain way, and although they were not accurate, yet by reason of the large number of them, we might get at great results, which is the only means by which accuracy could be secured. It seems to me if that be the position, it is going to lead us astray at once. We must understand it is impossible to secure absolute accuracy; if it were otherwise, the matter of experiments would be an easy thing, and we could go right along with it. But if we cannot secure absolute accuracy, it seems to me we must avail ourselves of every means to reduce the error to the smallest possible amount, and even then we may find it difficult to draw satisfactory conclusions from the experiments. I apprehend we may have been misled in our attempts to draw conclusions from averages of a large number of experiments that have been made. I think we cannot get accurate results—we cannot get at any principle, at any law, by comparing experiments that are filled with errors, provided those errors are of any considerable amount. For that reason I would insist upon being exceedingly particular on every point in conducting experiments. I have made this subject a study for a great many years, and I have collected a large library upon this subject. All the agricultural experiments I have been able to lay hands on, I have brought together, and have examined and compared; and the more I study the published experiments, the more I am in the dark in regard to any underlying principle. I can see fallacies that are of very great consequence. I can see omissions in the statements which would lead me to suspect that proper precautions had not been taken.

In regard to cultivation between the plats, I, perhaps, might have stated the matter a little clearer. If you have spaces between the plats, they are there for the purpose of separating the plats, and if you have something growing there, it is not a fair separation. If weeds are allowed to grow, some of the spaces would contain more than others. What I mean by cultivation is, the spaces should be kept clean and free from weeds, and nothing be allowed to grow upon them, because if you leave plants to grow upon them they will extend their roots to the plats, and defraud the crops by drawing the nourishment from them.

In regard to putting up cattle and feeding. If the conclusions I have drawn from our experiments are correct, the putting of the same weights into pens would not answer the purpose. I might have in one pen 500 pounds of very small animals, and in another 500 pounds of animals considerably larger. But if you are taking the larger class of stock, there might be 1,000 pounds in one pen, consisting of five animals, and 1,900 pounds in another, consisting of one animal. You could not compare them if there was a difference in age, and a difference in condition. The matter of individual peculiarity of animals is a very important one. I found where I had two or three animals in a pen, there was no increase. In another pen adjoining, where there was the same number of animals, there was a remarkable increase. I said, "Why is this?" I weighed the animals separately, and found one animal was losing and another gaining. If you want to know the value of any feeding substance, it will not answer to take the averages of the animals. The amount of food required to produce a given increase is what we want, and I would have each animal's food by itself, so that when that animal made no return at all, I would know it was out of condition, and not a fit subject for experiment, and throw it aside. There is another reason why I would put animals in separate pens. They do much better. When the animal gets contented in the pen in which he is placed, with none to molest, he eats his food quietly and lies down. Where there are two or three together, perhaps one is quarrelsome, and is continually disturbing the others by not allowing them to eat or to lie down. It is with animals as it is with persons. One is restless, and another is inclined to be quiet. When you have a large number of persons together, you find it exceedingly difficult to keep the room still. It is so with animals. One animal gets nervous and keeps the others confused and unsettled.

Professor Hamilton—I would like to make one remark. I took it for granted, when I made the statement in regard to putting a number of pigs in the same pen, that the same care would be exercised as when there was but one animal in the pen.

Professor Prentiss—I have had enough experience and seen enough to convince me that the difficulty in the way of conducting experiments is even greater than has been set forth by the remarks this afternoon. The materials and the forces of nature are so varied, and life is everywhere so variable, in plants and in animals, that we cannot tell whether to attribute certain conditions to the plants or the animals. Dr. Miles refers to what he calls the individual peculiarities of animals. Botanists recognize very great peculiarities in plants, that they readily see and recognize but cannot describe; it is what Linnæus has termed "physiological peculiarities of plants," some hidden mystery about them, something that controls them, something that we see, but do not yet understand and probably never will. For instance, you take two seeds of an apple, apparently alike, and plant them. One develops into a tree, which bears a large, excellent fruit; a tree of vigorous growth and handsome appearance; the other develops into a small tree, producing a fruit of little or no value. Perhaps the condition of the soil and climate are precisely alike, and yet these differences are developed in the growth of the different seeds. The same truth applies, only perhaps to a less extent, to every plant that the farmer grows in a field, to every plant of grain in a field of wheat or corn. So when we take these plants and subject them to culture, to see what method is most valuable, we cannot tell whether it is a difference in culture that is productive of the different results, so much as individual differences in the plants themselves. So in every way in which we look at these experiments difficulties present themselves. I would not infer that all experiments are of no value, because I believe they are of great value; but the experience of a single year, I consider to be valueless. The experiment must be repeated time and again; and finally, notwithstanding the difficulties are pointed out, I believe a result would be obtained which, to a certain extent, would be considered as a general law. The proposition which has been made in reference to having the different agricultural colleges conduct the same experiments, I consider to be in the highest degree valuable; because the more experiments are tried, the more varying the conditions, and taking them year after year, the more sure would be the results. So as I look upon the matter, I believe that the value of experiments in this country has just been commenced, or rather the experiments that would prove of value are just commencing, and the step we are about to take I consider to be of the utmost value in this direction.

Dr. Detmers—We have just listened to very able remarks in reference to the conducting of these experiments, and I wish to add but a few words. There is one point I consider to be of very great importance, and that is the different agricultural colleges uniting in their efforts in this direction, to demonstrate and to find out what influences soil and climate in different localities have upon the development of our different domestic animals, and even upon the different breeds of domestic animals. It is well known that in one part of the country fine handsome horses are produced, but the cattle in that locality amount to but little. In another locality they raise excellent cattle, but the horses are inferior. In another they raise the finest kind of sheep, and in another the sheep do not succeed at all. We may know the cause, but not thoroughly enough; and this would be a very good object for the united efforts of these agricultural colleges. For instance, if you ask a dozen different men what is the best breed of cattle, you will receive as many different answers. Some will prefer one kind and some another; one prefers the Devonshire, another the Ayrshire, and so on; all are liked more or less. It would be of great importance to explain not only to the agricultural student what are these different conditions and varieties, but to the agricultural public what makes one breed thrive so much better in one locality than in another. We know it is almost impossible to raise sheep successfully in low, wet ground. We know that horses thrive better in a high and dry country than in a low and wet one, although they may get a great deal more weight in the latter. But there are many points which might be explained by proper and rational experiment.

A good deal has been said about feeding cattle; and I want to mention one simple point, established by empiricism. It has been found out that where we attempt to fatten animals, when kept separate, they never thrive as well as when two or more are kept together. It seems that two animals, or three or four kept together, eat better. They are somewhat jealous of each other, and each afraid the other will get more than its share, it seems; and they eat better, and consequently thrive better on that account.

President Denison in the chair.

Dr. Gregory—The committee have taken it for granted, I suppose, that all the agricultural colleges and institutions, or institutions that are teaching agriculture, are conducting experiments. It is of course understood that the agricultural colleges were organized, not for the purpose of experimenting first and foremost, but for the purpose of teaching agriculture, or the branches of learning relating to agriculture, and it has not been uniformly accepted that the agricultural colleges are to be experiment stations. They are not necessarily experiment stations. One of the questions for us to settle is, how far they can be made experiment stations, how far their forces and funds can be diverted for this purpose and used for this purpose. In Europe the agricultural experiment stations are sometimes connected with the institutions, but not always. If I am rightly informed, there are some thirty-three different agricultural experiment stations in Europe, under the charge of some agricultural chemists, besides other parties assisting them. These experiment stations, some of them at least, are found connected with the institutions. Those that I saw myself were always connected with them, because I did not turn aside to visit any of those that were not; but many of them, like the celebrated experiment station of Lawes and Gilbert, are not connected with any of the institutions of learning. We know this, that the country is demanding of the institutions that they shall conduct experiments. The agricultural public expects us to conduct experiments. They are constantly calling, through the agriculture press, at agricultural conventions and otherwise, upon these colleges to help them to settle questions relating to agriculture. Whatever might have been claimed at the outset to be the duty of these colleges, I trust we shall fulfill a public demand and duty by instituting experimentation. At least it seems to be the judgment, I think, of the gentlemen present here, and all I have known in connection with the agricultural colleges, that experiments shall be prosecuted. What has been already said here will perhaps, sufficiently, lead us to infer the great difficulty attending these experiments. But we have been told long ago that there is no excellence anywhere without great labor. The truth does not lie on the surface always. It hides itself in the depths. It is to be sought for with great patience and with great care, and great study. When it is found at last, be it after ever so long a search, and after ever so great expense, it will richly reward the seeker. Now in the solution of the problems in agriculture, the discovery of laws in agriculture—for I suppose that is the object of the experiment, and not merely to gratify the curiosity of the experimenter, not merely to get at some half-way results, like weighing a thing by taking it first in one hand and then in another, and then giving a guess—it is possible to determine, somewhere approximately at least, what are the facts, and ultimately to reach a law.

What are the laws and forces which enter into any agricultural product, animal or vegetable? What if they are many and complicated? Are they more so than the forces that have entered into the other results and deductions, that men ultimately have reached, and determined the laws of? We should remember this thing. If we can get one single element reduced to its law—if we can in one single case discover a law that is fixed and invariable and has the force of a law in a multiplicity of things—we have put, as it were, a streak of sunshine into it—we have got one fixed element in the problem, and everything else will be readily solved.

As far as Dr. Miles' experiments which he suggests, and very wisely in the matter of feeding, you can take simple corn in its various forms, and, by a series of experiments carried out, you can ultimately arrive at something like a law in regard to the effects of feeding an animal on this one article of diet. May you not ultimately reach a law of animal feeding and growth and fattening, which you will carry elsewhere? The multiplicity of forces that enter into these experiments, to my mind, only prove this: the necessity of combination and co-operation. Suppose, for instance, that the Agricultural College in this State would try certain experiments as carefully as we can. We are trying them under a careful experimenter, who is present, and we may ultimately in the course of years reach a conclusion, as we think. Somebody in Pennsylvania tries the same set of experiments and he reaches a different result, revealing to us what we alone should not have suspected perhaps, that there were climatic differences or something or another that modified the result, and which therefore vitiated our supposed law, and compelled us to start afresh before we dared to publish the results of our experiments to the world, as an established agricultural law. It seems to me the argument is sound in the matter of the proposed co-operation. How far this co-operation can go will be determined by the nature of the experiments. We shall see how far we are under different conditions, such as will compel us to make allowances for our own and other experiments. To me it is a very serious practical question, and I suppose it is to the gentlemen connected with these institutions. The public are expecting certain things of us, and demanding certain things rightly of us. They ask us to do perhaps what we cannot. They ask that we shall so experiment as to discover for them how they may cultivate corn to the best advantage in this and other States; or how to feed animals, or what varieties of corn are best worth cultivating. They ask us to enter upon a set of experiments to determine it. Suppose you in Pennsylvania, or in Wisconsin or Michigan, go and work isolated and alone, and the rest of us wait until you have accomplished your experimentation; you reach a result and you publish it to the world, and the first practical farmer that makes a trial of that supposed result and law, discovers that it won't hold in his community, and at once throws contempt upon your agricultural science, and convicts you, as he says, of not knowing what you are about, and of pretending to discover some things which are not true. If instead of conducting the experiment in isolated schools, and not helping each other at all, we are prepared to say that a set of precisely similar experiments, arranged by the same man, and conducted according to the same rules, and as far as possible in the same manner, produces such and such results, we defend ourselves against unjust criticisms at least, and put ourselves and the whole public with us on to vantage ground, for giving new investigations, if no more. We are at least all agreed in this one thing, in which Herbert Spencer says: "Scientists and religionists are all agreed in this, if not in anything else, that there is something to be known, there is something to be discovered" There are some questions to be asked, but I doubt whether you are prepared to state distinctly and fully just what the questions are that are to be settled. Strip them naked and set them before us, and see if we can determine precisely what is to be experimented upon. We want to experiment in order to learn how to experiment, and to know what road we want to travel and what results we ought to aim for. What we want ultimately to reach is a law—not a fact—but law. Ultimately truth; but what law, what truth? Who will tell us? Will Dr. Miles? I do not know of any body better prepared, but I do not know whether he can tell us to-day.

I wanted to call attention to a practical matter before us. I hope after this discussion shall have proceeded as far as the Convention shall choose, that the subject matter will be referred to a committee, with directions to report, if possible, before the close of the Convention, distinctly, some one, two or three experiments, perhaps one or more in each one of the three departments which Dr. Miles has given us, which the Convention recommends to the several institutions to try; that they may begin to work on common ground; and when we meet another year, we shall be able to compare notes, and then have reached our real point of starting.

I want to add one word here, if I am not already trespassing on your time. It seems to me we cannot too much insist upon the utmost care and precision, so that we may eliminate, as far as possible, every single source of error from these experiments, and reach some results that can be looked upon as derived from the causes suspected at least. Nothing struck me more impressively in agricultural experiments going on at the European stations than this: the great nicety and care with which these experiments were being performed. I remember at Munich I saw some plats, less than those recommended here, in which not only the seeds, even when they were grass seeds, were measured, but they were carefully weighed and counted, and at the head of every plat was placed the number of seed. The professor told me that every result that was obtained from that growth, was weighed, root, branch and fruit, hoping ultimately to reach more clear and distinct results. Now, we all know that science never began to make advances until it called mathematics to its aid. When it began to weigh and measure and count and number, then science began to make progress. Science in agriculture can make progress no better than in any other branch, unless it comes down to measure and weigh and count, and applies mathematics to get precise results, and measures and weighs, as far as possible, all the forces that enter into it. We see the difficulties, but we cannot help ourselves. We did not make them. We are to encounter them. If I heard to-day for the first time, the sentiments of Dr. Miles and Prof. Hamilton and Prof. Daniels, I should shut my eyes almost in perfect despair; saying, there is no use, the thing is so complicated. But when I remember that every other science was at the beginning just as much of a riddle as this, and only solved by long and patient study; when I remember that, I still hope there is something to be learned in agriculture by the same patience and the same processes.

Prof. Swallow—I think you will find there will be some difficulty in extending the experiments to all the colleges in the country—some of them, at least. As a general principle, when we are experimenting to discover new laws, we shouldn't override the laws that are well known and already discovered. I was reminded of this by some remarks made about putting animals in separate pens. I suppose there is no law so well established as this: that solitary confinement with many animals is very deleterious. It is as much so with animals as with men. I suppose if the giant in the old story had tried to fatten his men in solitary confinement, he might not have succeeded so well. I remember separating two horses that had been together a long time and continuing one on the same feed; but he fell off all the time until his mate returned. I do not know how you will feed them so as to get accurate results. Sometimes, if you put animals together who do not agree, as will often be the case, there will be little parties of them that will naturally run together. If you could get those parties together and feed them, that would be better than if they were mixed with those for whom they have no affinity, as you may say. It would be difficult to manage this matter; I would rather regard the social principles, for we know it is a general law, than to disregard it.

I want to call attention to one thing—the question as to experiments in feeding. Experiments made in Maine and in Louisiana are almost worthless unless you take corn from Maine to Louisiana, and from Louisiana to Maine, so as to feed them on the same corn; for the corn in Maine is worth much more a pound than that raised in the south. They cannot raise the corn we do, and we cannot raise theirs; and the comparison of experiments made in such localities would be of little value, although not so much as those in Europe. They are almost valueless to us. What we want, and what our colleges want to do, is to each investigate the principles applicable to its own locality. You may prove, for instance, in Michigan that in your sandy soil a certain kind of manure is the best for corn and wheat, and we try it off in Missouri, and it would be a failure. We know it beforehand. We place your barn-yard manure on the ground for wheat, and it will injure it, but on the sandy soil in Michigan it will be of great value, but on some other soils animal manure will lessen the crop rather than increase it. There are certain things which you know, and that we don't know. It seems to me that we can do more by having a certain class of colleges, whose relations are very near to each other as to soil, take up one series of experiments; and another class of colleges, having another kind of soil and climate from those already related, take another class of experiments. That is, have each take up a certain class of experiments which would come within the range of its climate, soil and stock. I do not see, especially in the feeding of animals, that any experiments in Maine would be of much value to us in Missouri, the climate is so different. I do not see, on the other hand, that their feeding hay would benefit us much. We raise timothy and red clover as they do, but it is a different thing from theirs—as much as the corn is.

In regard to raising corn, for instance. You may try experiments with corn in Maine, and we try the same experiment in Missouri. The experiments are made with different varieties of corn, and we could scarcely compare them. They may raise less pounds, and yet more nourishment than we would. One kind of corn needs a little different nourishment from another.

I simply want to call attention to this point. I do not see how we are going to establish a series of experiments throughout the country on any point which has been spoken of, so as to make the comparison as valuable as it would be if they established, as I said before, a series of experiments with a few colleges whose conditions are about the same. Another thing, if you are going to conduct a few experiments by all the colleges, you and I will be dead before we know much about the results. People are in a hurry in these days, and if we can do a little something to aid those around us in such particular states, as we will have to do to avoid "going up the spout," that will be the much better way. They are not going to wait for us a great while. People are too much in a hurry, and if the agricultural colleges do not do something soon, I think they will ask in vain for much assistance or sympathy. I think that would be the result. I believe I am not mistaken that the idea in regard to whether we are compelled to have experiments is not correct. I think the law contemplates experiments as imperative on the subject. I will not be positive, but I know this, that in our reports we are required by law to give the results of experiments.

Prof. Daniels—I concur in the remarks made, as to the difficulty of experiments, and I believe it is true, as has been said, that nearly all the experiments that have been made are useless as such, that is, useless as giving us any general law, or any data from which we can draw any conclusions. But they have been of use in this, that they have taught us where we must begin. There is another thing that I think is true—lamentably true—that the very men from whom we must look for opposition, and who will be continually against us, are precisely those men for whom we are laboring. They are looking for some immediate results. They expect, as I heard a farmer say, the kind of education from the agricultural colleges, which will enable a man to take up a handful of soil and feel of it, and tell you all it is composed of. That is the kind of knowledge they are looking for, and those are the men from whom we are going to get opposition—the men for whom we are laboring. I do not believe that any man who has not been personally connected with careful and accurate experiments, has anything like an adequate idea of the difficulty there is in connection with carrying on experiments. It grows upon me every year as I am connected with it. I have lost faith in the results I have obtained every year, because I see how slight variations affect the experiment. So I have not a great deal of faith in the experiments that have been performed, I do not care by whom, or where. But I know we are getting nearer and nearer to what will be true, and what we shall find to be true, and the only way to get at it is by patient, earnest work, and although we get opposition from the farmers, as I know we shall, yet we can only work on earnestly and faithfully, and good will certainly result.

In regard to the remarks of Prof. Swallow, with reference to a series of experiments being prepared for one section of the country, I think I see the fallacy of his reasoning. Let us take the example of the corn culture in Maine and Louisiana. The experiment that is being conducted in Maine may not discover a law which will apply to Louisiana, but if we conduct the experiment in a certain way, and we find that certain results, if we carry on the experiment with any other variety of corn in Louisiana, follow relatively, it only follows that the law we have been trying to learn is a general law, and it applies not only to Maine, but to Louisiana as well. It seems to me this shows at once how important it is that these experiments should be carried on generally over the country—over a greater area, in order to get some data from which we can generalize—not laws that are local but general laws which agriculture may look to as settled and definite laws.

Professor Hilgard—I agree with the gentleman in this: that the more we employ experiments, the more apt we are to come to general laws instead of local experiences. The matter of experimenting has been "run into the ground." Experiments made by private individuals have been reported as general laws, or illustrating general laws, without any basis for the assumption. It is that which makes a great portion of the agricultural journals worthless, and a stumbling block to one who is trying to learn the truth. Each man tries to put forward his own experiences as the proper course to follow in all cases.

There is one point I would wish to call attention to, as demonstrating the importance of not relying entirely on the experiments made in the old country, for the reason, the soils have been cultivated a long time, and a great variety of manure is used on them, and their history is not known. It has been stated by one experimenter that it was impossible for them to obtain the average condition of the soils. In this country we are more favorably situated, and we have succeeded in separating our soils into certain classes, readily recognizable. For these soils we can establish certain rules, which, so far as I am aware, hold good. The use of fertilizers has not been very extensive in this country. In Europe, the use of bones, ground, has been practiced for a considerable length of time. We all know that it takes a very long time to disintegrate bones. The way it is ground is of such a character that it takes 25 or 30 years to disintegrate it all. When it comes to the use of mineral phosphates, such as have been used lavishly in Europe, there is no telling when the supply will become exhausted in the soil. In the soils of the prairies it is comparatively easy to get a soil of uniform character, but I do not think the experiments in Europe are applicable to this country. In Mississippi, we are able to class our soils under comparatively few heads, owing in a great measure, to the general geological formation. It is the same in Indiana, as far as I have seen, but in many sections the disintegration of the rocks influences the native soils, and causes the difference, which cannot be taken into account. I believe it is impossible to establish anything more than local laws. Great care should be exercised in the selection of the location of the experiments, and especially land that has been subject to long cultivation should not be selected for experiments, for it introduces an element which it is impossible to appreciate.

I confess I cannot agree with the strict separation that has been suggested between experiments of a practical nature and those of a scientific nature. One gentleman suggests we should come as soon as possible to the point, and do something which will tend to check the opposition we are apt to receive. I believe, with Professor Daniels, that we must face the music, and stand up and say we are not able to give general rules that will hold good for all parts. The practical men, so called, are really the most impractical men in the long run. We must educate the people, show them the difficulties in the way of immediate results, and the good we hope to accomplish by patient and continued effort. It takes time to do all this. An experiment of ten years is not a long experiment, and yet how frequently has it happened that, the eleventh year, that which seemed to be certain and fixed has failed. The Lois Weeden system, which has been so much praised for a dozen years, has finally failed, where it had been continued for a long time.

I am pleased with the views of Professor Hamilton. I think averages both in practice at one and the same time, and of a great number of things, is the only mode by which we can secure really practical results. But this opposition, I think, we must leave out of consideration, and if we wish to do good, we must face it bravely. This opposition I have encountered perhaps in as a great a degree as any gentleman present. Before the war I investigated the soil of Mississippi, to learn from what formation it was derived. The question that arose wherever I went, from practical men, was, "Do you pretend you can raise more than I can, or know better how to manage a plantation?" I do not think we ought to count these people in. We will have to fight the and might as well make up our mind to it. Let us go forward in the true mode of inductive experimentation; that is the only security for the colleges. I think the difficulties can be overcome by experimentation; but do not let us have any putting forth of general principles, or what may be from local experiences. I will not detain the Convention any longer, but I am confident we must not look to anything like a compromise with those who would push us on to declarations as principles of things which we have not sufficiently tested.

Dr. Miles—As there is no one else to occupy the time, I would like to say a word or two more. The separation of animals in feeding experiments has been objected to on what seems to me to be purely theoretical grounds. It is easy to make an assumption, and from that reason to erroneous conclusions. We are all aware that solitary confinement is not profitable, yet from that fact it would hardly be safe to reason that we could not separate animals for experimentation. The question really is, how have we found it in our experience in the treatment of animals.

The facts are simply these, so far as my experience goes: that the animals in a pen by themselves are a great deal more quiet, and they thrive better, and do better every way, than where there are a number of them together. Take the case that Professor Swallow suggests, of animals that have been associated together for a long time, and then separated. Take a span of horses that have been together all their lives, and then separate them in the expectation of getting a good result in feeding them, and you will be very much disappointed. I have tried that—placing a number of animals together, and then separating them after they got acquainted with one another—and when they were separated they fell away at once, notwithstanding there was an increase in their feed. In selecting animals for experiments, it would be desirable to get those that have not these strong attachments. If there was two or three together, it would not be well to separate them at once, and commence experimenting, but they might be first separated for a sufficient time to form new habits. We keep a large number in pens by themselves and they do not come in contact with other animals except occasionally, yet they seem to be as contented as those where there are two or three or more in the same pen. Calves that we keep in box stalls, are better contented than those where there are two or three together; so that really this is not a question of theory, but is to be determined practically how we can best promote the growth of animals.

In regard to division of labor in experiments, it seems to me that the argument is carried a little too far. We know it is desirable at the present time to make a division of labor. It is impossible for one man to master the entire range of sciences, and become an adept in each. Great discoveries have been made by certain men confining their attention to certain objects, and working them out. It is desirable, of course, to repeat experiments, but the mere fact of repetition does not insure accuracy. If your experiments are defective, you may repeat them through all time and never get a satisfactory result. That is the point that should be kept in mind: repetition is absolutely necessary in experiments, but is not the only element. Accuracy is of the first importance, and then the repetition of an accurate experiment is essential. That is. when developing a law or principle from an experiment, we must do it with all the precautions that can be used. The progress of science has not been on account of the multiplication of observations, but the increased accuracy of them, and the employment of more perfect means of observation. Our senses become more acute, and we are able to detect slight changes; then the repetition of a nice observation has given us wonderful progress in science. I would seek a division of labor and the benefits of co-operation at the same time. In this division of labor, I insist in the first place, on the importance of confining our investigations to a single point. We should not try to mix science and art; we should not grow a crop of wheat and then send a chemist to examine the soil, and draw a conclusion as to the manner in which the plant has grown. We have had too much of such science and investigation. How has progress been made by the scientific men, and what are the scientific experiments to which I refer: the chemist and physiologist have wanted to know what particular elements were taken up from the soil by the plant, and in what particular form. How does he go at it? He takes distilled water and puts in certain definite substances, he shows what they are, and then grows his plants in that; he has certain accurate conditions in his experiments. The scientific man must control all of the experiments in his investigation; he must control all of the conditions of the experiment in his investigation, or he will not be successful as a scientific man. It will not answer for him to have control of two or three conditions and then guess at the rest. Here is the difference between investigation in science and art. In the investigation in art we cannot possibly control the conditions; we will control what we can, and then must compare observations for a long time, to get at the probable element of error. Where we are drawing deductions as to the results experiments, we must make allowances for the elements of error which underlie all our experiments. The distinction between the two lines of inquiry is very distinct. In art we want to get at certain rules of practice. An experiment that would be satisfactory so far as that is concerned, would amount to nothing so far as increasing our scientific knowledge is concerned. Scientific investigation must be made with more care; one great reason why such a change has taken place in our agricultural chemistry, has arisen from the fact that former experiments in chemistry did not control all the conditions; they had not apparatus sufficiently delicate to detect all the slight changes which took place. Just as long as we work in this direction we are going to meet with disappointment.

In regard to the quality of corn in Maine and St. Louis, I do not know there is such a difference in the feeding quality of this corn. I am not aware that the matter has been tested experimentally. I am aware there is a difference under certain circumstances; an analysis will show a difference in the quality, but it does not follow there is a difference in the feeding quality of the grain. We have been running along for a number of years with the theory that the composition of the grain was an index of its nutritive value. No one now will pretend to advance that doctrine who has examined the latest researches in physiology and chemistry. But, admitting there is a difference in the corn of Maine and St. Louis, what we want to get at is this: the result of feeding in Louisiana or Missouri under the same conditions precisely, and the same care taken to secure accuracy. If the corn from Maine was taken to St. Louis, there would be a difference. There is an element of error underlying that we cannot get at. We may not reach it in our life time, but we must determine it before we can get at principles that are safe for us to follow in practice. If experiments must agree exactly in order to be of value, we may as well stop experimenting, for you will never get any two experiments to agree precisely, because you cannot control all the conditions. But we can get at the general principle, after eliminating the error. For instance, I wish to know what the effect or value of a certain commercial fertilizer is. Should I apply it to one plat? I should have to examine a large number of unmanured plats and find their variation, and then I may compare the unmanured with the manured plats. But in order to get at the value, I must deduct the variation of the unmanured plats. We can only make approximations toward accuracy, make the experiment as we will. If we have the experiments tried under the same conditions in different localities, we have the means of comparing them. I have been for years collecting different experiments for the purpose of comparing, in order to get some underlying principle, and my difficulty is here: Each one is tried in just a little different manner from the other, and there is no chance to compare them. I attempted a comparison of Lawes and Gilbert's in feeding experiments with my own. He took pigs nearly grown up and fed them for eight weeks; we took young pigs but an hour old and raised them, first feeding them milk and then corn meal. We got better results so far as the feed was concerned. When we took corn meal we did not try all the different kinds, but confined our attention to milk and corn meal. When I came to compare the results, they differed materially; yet, notwithstanding his experiments were tried in England and ours here, and he had corn meal that was imported, I found a very marked agreement. They differed, and yet they agreed in principle. They agreed in this: that the animals consumed more in proportion to their weight in the earlier stages of the experiment, and gave a greater return for the food consumed, than afterwards. They are experiments wide apart, and each taken by itself would be, perhaps, of little value; but together they corroborate one another.

There are many points I would like to bring up. It will not answer to experiment for the sake of our bread and butter. We must go at it as earnest scientific men seeking to develope the truth, and let it make no difference who is pleased or displeased with the result. We must get at it in this spirit, regardless of outside clamor. I know that farmers demand of the agricultural colleges impossibilities; I know they are expecting immediate results. A person said to me two years ago, "I do not think much of your agricultural colleges." I said, "I am not surprised." He said "Why?" I said, "Because you are expecting something impossible from it. You think we claim we can take a green boy out of the city, knowing nothing about it, and give him a little agricultural chemistry and physiology, and then turn him out qualified to instruct old farmers." He said that was about it. I told him we believed and claimed nothing of the kind. Agriculture must be studied, and our rules must be based upon experience.

Prof. Swallow—I wish to say one word. I seem to be unfortunate. The point I wish to make is this—I may be wrong, but I wish to state that twenty experiments with twenty elements of error in them are not so good as two with no elements of error. That is the idea. We have forty colleges in this country making the same experiments, and in one-half of them there is an element of error which we know must be there, and the result will not be so valuable as if ten of these colleges were making the experiments without this element of error. No man would accept it as conclusive. You may as well say you could feed one animal on wheat and one on corn, and the results would be the same. I want to get at results as soon as possible, and as men employed by the State, we are bound to do this. My idea was, we could get at some results more rapidly by having a sufficient number of colleges take up a certain class of experiments in which they could experiment without any necessary element of error, that we know of. I say you would get no more accurate results by having other colleges perform the same experiments. There is a popular idea that we must do something for the public, and I think we can do a great deal. I have been accustomed to say, for a great many years, there is something for agricultural colleges to teach even now. There is a vast amount of knowledge that our farmers do not possess, and which many of our men do know, and which the colleges ought to be prepared to give at once. I would not be misunderstood in this. I am for going ahead and finding out something else, while we are doing this. I suppose this is a meeting—a consultation as to how we may best do that. Although Prof. Miles thinks my ideas about the social qualities in animals is a theory, yet the world of naturalists have been laboring under that theory for these many years. I suppose by calling it a theory is meant that it is not a matter established in science. I do not know why it should rather be called a theory than a fact. My reason for making that remark was simply this, I wished to avoid in the experiments any element of error. The gentleman has told us how he provided against that element. He took the animals young and taught them to restrain their social qualities, the same as they do the monks and hermits. When they want to make a man a priest, they separate him from the women and keep him alone. It is doing what I saw he ought to do; be cautious about admitting elements of error into the experiments. I hope we shall come to some results which will be of great benefit to us as a whole. I came here because we are just trying to begin. I expect to be benefited more than the rest of you. Some of you have been at the work many years, and I will be able to learn by your experience, and in that way I expect to carry away more than I brought. Some of you, I hope, will carry as much.

The Chairman—The question has been raised, and is fundamental, whether these institutions are bound to experiment at all. The only reference in the law of Congress is in regard to the Annual Report. It defines in section 4 that the main object shall be to teach such branches of science as are related to agriculture and the mechanic arts, Under section 4, article 3, it provides that an annual report shall be made, recording the progress of each college with regard to improvements and experiments made, with their cost and results, seeming to imply, but not necessarily, that they are to make experiments.

Dr. Detmers—Several remarks have been made in reference to the feeding of corn raised in Maine and Louisiana and the difference in the grain. I admit there is a difference, but that is not the only thing that causes a difference in the results. There is a great difference in the climate of the two places, and that affects the physiological condition of the animal. The dampness or the dryness of the climate, the temperature, and perhaps a great many other things, have to be considered in making the experiment.

Dr. Miles—I will make but a single remark. Prof. Swallow and myself are agreed that we are anxious to get at the result as soon as possible. We only differ slightly as to the way. One object I had in proposing the method of conducting the experiments was, that it would save time and get at the results sooner. I agreed with the Professor that it would be better to have one experiment without any error, than twenty with error. I will go further than that. I would rather have one without error than twenty containing error. The difficulty is this, however, and is one we must face: We cannot make a feed experiment, or an experiment in feeding, without it contains an error. But if we co-operate in trying the experiment we will sooner get at it, owing to the manner in which the experiment is conducted. I might experiment this year and get one result, and another next year. I do not know whether the variation is owing to differences in climate or not. If it had been tried at two different points under the same condition, it would be better than the same experiment tried two years in succession on the same ground. If the subject is assigned to me to settle, I might go on for fifteen or twenty years to do the same thing over again; but if twenty of us take hold of it we can go along four or five years, and when we get one thing disposed of we can take another.

Here is another point. Let each institution try as many of these experiments as it can, and just such as it chooses to try. If there are those that are strong enough, and have means to devote to the matter, so they can keep on with all of them at the same time, so much the better; but it is better to try some experiment than do nothing. We must not expect to get absolute accuracy, but to find the element of error, so that it can be eliminated. Even some of the most perfect instruments for philosophical investigation and observation are very imperfect—as the thermometer, the barometer, and many other instr ments; but tables are constructed for the correction of these errors, after observation and trial, and results are reached which are practically accurate.

Prof. Swallow—There is this thing to be considered, that the experiments are to some extent limited to particular sections of the country. For instance, we want experiments in cotton; but you have to limit them. That will give the idea. We must have general experiments, and then special.

Mr. Flagg—I want to say a few words by way of preface to the offering of the following resolution. It is getting pretty well along in the day, and I suppose any conclusion that we may arrive at should come as speedily as may:

Resolved, That a committece of five be appointed to report to this meeting a set of experiments recommended for trial at the agricultural colleges in the various States, with detailed statements of the methods of performing them, so as to insure all possible uniformity of conditions at each point.

The discussion before the meeting this afternoon has been as to what would be the proper experiments to be tried in common by the various agricultural colleges represented here, and the proper method of performing them. We have heard at considerable length from Dr. Miles, and there has been considerable discussion as to the practicability of doing it.

I should like to go back and consider to some extent the various subjects of experiments, which I think would properly come into the hands of the agricultural colleges of this country, and also consider to what extent we should take those up as a body, and endeavor to perform them in common with one another. I recognize the fact that there would be a large number of experiments which each class would have to try for itself—experiments which would be peculiar to their soil and their climate. Of course we do not expect to try experiments in growing sugar cane in Illinois, but there are such general crops as corn and wheat affording abundant scope for investigation. Many of the cereals can be cultivated to a greater or less extent nearly all over the country, and uniformity of condition can almost be secured. The corn of Maine may be planted in Louisiana, and at the same mean monthly temperature as in Maine, and the conditions in that case, it seems to me, would be perhaps nearly uniform—as near as may be—with the exception of soil and climate.

What I was going to say is this: there are a large class of observations and experiments that may be taken in hand by agricultural colleges. We have the meterological observations of the Smithsonian

Institute, and those which are now being made in behalf of the signal service, and they ought to be extended and made much more of than they have been in behalf of the agricultural interest. The agricultural interest is more important than the commercial. We have a large series of experiments of which no mention has been made. Take the experiments in light, heat and electricity, and their effects on vegetation. You will remember the experiments of Professor Stuart, which would tend to show that electricity may have an important bearing on the growth of plants. The different effects of heat, moisture and light have been but partially investigated, and there are a great many experiments of that kind throwing light on these various subjects. It is one of my ideals that ultimately, if not soon, we shall establish at each of our agricultural colleges an agricultural experiment station, similar to those of Europe. I think that is absolutely necessary to agricultural advancement. We know what Johnson intimates, in his preface to "How Crops Grow," that the agricultural stations have done more to advance agricultural science, and even agricultural practice, than all else together.

In regard to getting hold of experiments which are popular in their character, I have entire faith that science will do wonders for agriculture, although at the same time I recognize the fact that our agricultural colleges are dependent upon the money of the people for their support, and we must recognize the wants of the people in such a way as to secure their confidence and their aid; and looking at that, it has been my own feeling, to a great extent, to endeavor to popularize agricultural science. I am strongly in favor of the proposition which has been made here in reference to securing the performing of at least a few experiments in common. I am aware of the difficulties under which many of our institutions are laboring. Our own college in this State secured, at the last session of the Legislature, an appropriation of $3,000 a year, for two years at least, for the special purpose of making experiments. I know many institutions are not so well off in that respect. The Cornell University, of course, has an immense endowment and is practically independent. But recognizing the lack of means of others, I should hope these experiments will be simple in their nature, and carried on with as little draft on the treasuries of the various colleges as possible. I can see that it is possible to attain in one year, by the use of all the agricultural colleges, the same results that would need twenty years of the experience of one. Suppose, for instance, we try some experiment this coming year at twenty places, and suppose the result is the same in all or in three-fourths of them, then we might consider the point essentially settled. As we are doing now, an experiment is tried and results in a given way this year, and our farmers will nearly all say that settles the matter. One result would suffice them, but in the case of our agricultural colleges I do not think we would try it less than half a dozen years before making up our minds, and it might be unsafe to decide in that time; but when twenty or thirty institutions try the same experiment in the same way, we can settle a great many of the practical questions rapidly, and it seems to me, sasisfactorily, and I hope it will be the feeling of this Convention. We have represented here about a dozen States, having agricultural colleges, and I hope that we will take this great step for the advancement of the agricultural interests without any fear as to the results.

Mr. Murtfeldt—If I have anything to say it will not be as a scientific man. If you are going to make a distinction between the practical and the scientific, I want to use the word "practical" here. Supposing an Illinois farmer wants to stall-feed a hundred head of steers, will it be profitable for him to build a hundred pens, and confine each steer away from the others? Would it be practicable to confine two or three hundred hogs each in a separate pen? Supposing the experiment that Professor Miles speaks of, that he found out that the animal that is confined separate will do better—can it be reduced to practice on any scale that will be profitable to the men that practice that kind of stock-raising? So with regard to the feeding of corn. I believe, in his first remarks, Dr. Miles said that he fed corn meal successively. That may do for hogs, but I should not say it would do for steers or sheep.

Dr. Miles—I said we had fed corn meal successively, but would recommend experiments in feeding whole corn.

Mr. Murtfeldt—I will take him on the same ground. Supposing he feeds corn raised in Maine, Massachusetts or Vermont in the grain, and supposing the college in Missouri were to feed corn raised there, would there be a different result in experiments? As an unscientific man, but as a practical man, I should say there would be. Our corn is comparatively soft, while the corn of the East is very hard. With regard to manure, he says that it depends on the amount of the feed consumed.

Dr. Miles—The quality.

Mr. Murtfeldt—That is the word that I wanted to get in, because I know that there is a great difference, whether the cattle are fed on corn, or timothy, or clover. I think that the experiments should have a practical bearing. If I recollect right—and if I am not right I hope he will correct me—he commenced feeding young pigs with corn meal. I want to know what practical good we get from proving the fact, that animals from the very hour of their birth can be fed with corn meal. Supposing he had succeeded in that kind of experiment, what would the practical result be?

Dr. Miles—I am very unfortunate in being set up as a target here. In presenting a matter of this kind in a brief space, as we have to do, it is almost impossible to get in the details fully, and I have been misunderstood in every particular. Take the case that has been brought up by the gentleman from Missouri about feeding. Would it be profitable for an Illinois farmer to build a hundred pens to put in steers for fattening? I say no; it would not pay. That is just the reason why we are here. If we could do that and make it pay, we would not need agricultural experiments all over the country. What I would do is this: Ascertain the value of the corn fed in different ways, so that the Illinois farmer may ascertain whether he is getting the full value of the feed. But these accurate experiments show he is not getting one-half of the value of the corn meal, or is not getting one-half of the return he should have had. And he will say I am not pursuing the best practice, and this high standard set up before me will be an incentive to a better practice. The gentleman says, I fed young pigs with corn meal from the start. I have not referred to these particular pigs that he has in view in this discussion. I have not had time to take up our experiments in detail. The facts are these: We have taken the young pigs and fed them milk until of suitable age to live on meal. But we have never made the sudden change from milk to meal. I put some a little sooner on the meal, with a view of ascertaining the result. The result was that in treatment, which I considered unfair, to get at the physiological fact, the oil seemed to ooze out through the skins, but that has not been so except in that case. The mixing of this with other statements has tended to produce false impressions.

Mr. Murtfeldt—I did not mean to be unfair, but I wanted to put the point I wished to make as strongly as I could. I wanted to have the experiment being tried to have a practical bearing. I did not mean, in speaking of the building of a hundred pens for as many steers, that the farmer should try the experiment, but after these gentlemen have established the fact that an animal in confinement will do better than if it has company, it is still impracticable to go on and carry out that idea. It is not a practicable fact.

Dr. Miles—There is one point that has been admitted. In conducting these field and feeding experiments, we should pursue the same system, as far as possible, that is ordinarily practiced on a farm. But it is impossible to make your experiments exact and conform fully to all the practical usages.

Professor Hilgard—I am glad to see, from the remarks of Dr. Miles, that there is no difference between his views and my own, except he does not call science what I call it. The practical experiments are altogether scientific; that is, they are made on a scientific basis. What I wish to object to was making the experiments without controlling, as far as possible, the circumstances, and among these referring to positions, soil and so forth.

Dr. Miles—I must be allowed to make a few more remarks. I do not undervalue scientific investigation. I believe we should have in each of our colleges proper apparatus and a man to conduct experiments for the promotion of science. The distinction I would make between science and practice might be illustrated still further. In feeding stock, for instance, we want to get at the money value; we want to know what corn is worth in dollars and cents. In the scientific experiment, which has to do with the explanation of these results, we want to know the elements that enter into the constitution of these things and in what proportion they are combined. There are two lines of inquiry. We must conduct practical experiments with the accuracy of scientific experiments, applying the same methods. The scientific man, if he understands practical matters, is more capable of improving a practical experiment, than a man who does not understand scientific matters. But the scientific man who makes experiments in the art, is not familiar with the details in many cases, and he is looking at results, while in the act we want to get values in dollars and cents.

The meeting then adjourned to 7½ o'clock P. M.

7:30 O'CLOCK P. M.

Met pursuant to adjournment.

The Chairman—The discussion now in order is the question of the relation of the industrial school or scientific schools to each other, and the institutions of the country. The discussion is arranged to be opened by Professor Gilman, of the Sheffield Scientific School.

COMMITTEE ON EXPERIMENT.

I will announce, as the committee called for [as the Committee on Experiments] by the resolution adopted this afternoon, the mover of the resolution, Mr. Flagg, of Illinois, Professor Miles, of Michigan, Professor Hamilton, of Pennsylvania, and Professor Prentiss, of New York. The Chair desires to scatter the appointments pretty widely over the country, and would like to have added one name from the more extreme West, and one from a State further East.

Dr. Miles—I move the committee be increased by the addition of two names.

The amendment was adopted.

The Chairman—I add the names of President Denison, of Kansas, and Professor Peabody, of Massachusetts. The discussion fixed for this evening is now in order.

RELATIONS OF SCHOOLS OF APPLIED SCIENCE TO ONE ANOTHER AND TO OTHER INSTITUTIONS.

Professor Gilman—Mr. President and Gentlemen: The remarks I have to make this evening will be quite desultory, as I had no expectation of saying anything. I shall endeavor to shape them so as to draw out other gentlemen I see here, partly by stating some points upon which I am wanting information, and partly by suggesting some of the topics which seem to me of wide and lasting importance to the country.

I observe, by your remarks, that the sentiments which prevail here have very particular reference to the matter of Agricultural improvements. My interest in all this, and in the agricultural aspect, is very great; but by no means restricted to it. I believe there is going through our country, at the present time, a very great change in the notions of intelligent people, respecting the higher, middle and lower education. It seems to me desirable that, whenever an opportunity occurs like this, we should talk over among ourselves, in the most informal manner, the principles which should guide us. I am afraid that what I shall say will seem to most of you as of very *Eastern* character, and I am frank to admit that my knowledge of these institutions is largely based on observations made among those of the East. My object is, in coming to the West, to learn what you have learned here; for, so far as I can observe, you are much more free from routine, from the weights of precedent, and from long practiced usages, which may be good and may be bad. You are working out, with a good deal of liberality, a great many of the propositions which we look at from a distance, and we are very desirous of learning how you are getting along with a great many of these questions, and, therefore, what I have to say will, I trust, be of a kind to provoke comment and remark from you rather than with the expectation of adding much to your knowledge.

In the first place I suppose—among us it is more the case than among you—that there are growing up among these national endowments to schools of science, which receive the benefit of the Agricultural College grant so-called, a great many private institutions, founded many of them by individuals, and many of the most noteworthy character; and among them is the Bussey Agricultural School, which is connected with Harvard University. The fund has been accumulating, and now they are making announcements what they will do. Akin to that is the one at Worcester, a great school of Technology; another at Hoboken, a great school of Mechanical Engineering; at Dartmouth College they have two funds aside from their national college fund, and so I might go on. Some are of a lower grade and some higher. The question has arisen how far these endowments, national or private, shall be allowed to exert an influence over the common schools; how far it is necessary to have preparatory schools adapted to them. Many of these questions have arisen which are not yet settled. I see that some remarks were made in St. Louis of a severe and cutting character, bearing upon this matter. We are already discovering that public schools or high schools and academies are modifying their course of instruction. We have two schemes of study, one fitting boys for college, and the other for the scientific school. The change in the last two or three years has been very noteworthy. I merely throw this out to show you how completely I think this movement has taken hold of New England and the East, and how it is receiving recognition from State Legislatures, private individuals, teachers and parents. With us the matter is going forward. The first point is the spirit of entire friendliness to all sorts of learning. A few years ago all the movements of practical education, so-called, were in the direction of hostility to all classical training. So far as I can judge there is no such feeling now existing. I think those connected with classical colleges do not look with confidence on those schools. They do not feel quite certain that they are going to answer. They are a little afraid it is a sort of royal road to knowledge; and now and then I hear the phrase that this is a bread-and-butter knowledge that you are after, and they seem to think it is a college with the learning left out. On the other hand, we have the remnants of prejudice on the part of men who do not believe in book farming, and think that the teaching of mechanics in a school is putting learning in a workshop, where, they say, it does not belong. We have these two classes; on the one side a little suspicion on the part of classical men, and on the other a want of confidence on the part of practical men; but we are beginning to reach such results that both parties are satisfied, and I think the war of hostility at the East is over, and the friends of education are agreed that both are good; the question being what you want.

The next point I make is this: In all the New England States and New York, we have not been able to give a college endowed by national grant a special Agricultural character. In Massachusetts, as you all know, the grant is divided into two parts; one-third was given to one establishment and two-thirds to the other, and two schools are built up—one of Technology and one of Agriculture. In Rhode Island, it went to Brown University; in Vermont, to the Scientific School of the Burlington University; in New Hampshire, the founding of a school in connection with Dartmouth College; in New Haven, to the Sheffield School; in Maine they are building the Maine College, and in New York it is the Cornell University. In all these cases, I believe, while there is a decided leaning toward Science, theoretical and applied, in the structure of the colleges, there is also a very decided recognition of liberal culture. They are not, for the most part, to be in one specialty alone. With us they are not largely Agricultural, although all recognize the Agricultural element; all of them have Professors of Agriculture; all recognize a course of study in Agriculture, and all would be glad to have Agricultural students. But for the most part in New England, the tendency is to mechanics, civil engineering, to chemistry in its relation to industrial pursuits, and to the pursuit of science for its own sake, or as something which the world requires teachers in. So we are going forward, not in an Agricultural way, but in the general direction of applied science.

In the third place, I would say that our tendency is largely to the giving of a general education, as well as a special technical one. I mean, by that, while Civil Engineering, Chemistry, Agriculture and Mining is taught, all of them are marked specialties, and there is a strong desire that the men thus trained shall be well fitted for any station in life; and a good deal of prominence is given to the modern languages, to German and French and especially to the English tongue, so that these men may know how to speak and write when called upon. There is, as far as time allows, a recognition of other subjects, like Political Economy, History, Moral Science and things of that kind. These, however, are subordinate to the main special studies.

I would say, in the next place, our great want in the direction of the colleges, is good preparatory schools. There are, in New England, a few famous schools, like those at Exeter and Andover, for instance, which are admirable training schools for the ordinary colleges; but thus far we have hardly anything to prepare for the scientific schools. We want to strengthen our introductory schools. We all feel that the college proper, the Scientific School and the University, will not flourish among us until we have a very much larger number of these preparatory schools and of a much better quality; and most of us who are interested in these matters, at the East, are working hard for the general education of the community, and for the improvement of the public schools, the high schools, the academies, and doing everything that will quicken the community into an appreciation of the importance of these things. We are obliged to go around the State in old-settled communities, to lecture, take part in teachers' institutes, call meetings of farmers, to arouse an interest in these important educational movements. I do not believe this new education, as it has been called, will achieve its proper work until a great deal of that enlightenment is done far and wide. These are a few points which we are wanting light upon, and I am glad to tell you what we are trying to do.

Coming to some other matters, I would mention first the question of how far manual labor in the Scientific School is important, and how far it is unimportant. At New Haven we have felt that we could not urge it upon the young men; that if any one chose to work and could find time from his studies, we would favor it. Many of our young men do work in vacation, and some in term time, but we think the time is so crowded with study, they would have very little opportunity for work. I do not know how we should feel if we were so fortunate as to possess a fund for the maintenance of a shop for discipline in mechanics, or having a farm given to us, or having a large amount of money. We have kept the time occupied with hard work. At the Worcester Institute of Technology, every young man is required to spend a certain portion of his time in the shop, and becomes there familiar with the use of tools, and learns to manufacture certain things, under the charge of the Superintendent, which are sold in the market. The shop takes the place of a regular manufacturing establishment, and is known in the trade for the manufacture, among other things, of lathes, which are supplied at business rates for profit. In the Massachusetts Agricultural College, every boy is required to work Wednesday and Saturday afternoons, for three hours each, and he is paid for that work, according to its value, from twelve to twenty cents an hour, and he may work more if he is inclined, as some are.

Another point, that interests us a good deal, is whether or not it is desirable to have a farm. I see how much is thought of it in the West, and I see how important it is, and I enjoy very much the things I have heard to-day respecting your plans for the future. I can only say of New Haven, thus far there has not been a call for it, and those interested in Agriculture have rather avoided encouraging anything in that direction, because they have felt that with us the number of persons to be trained in Agriculture is very small indeed, and that the cost and expense of taking care of a farm, in proportion to our means, would be very great, and therefore, perhaps, to be avoided.

The Military matter interests all of us connected with the national grant. For the most part in our neighborhood the military clause of the bill is regarded with no particular favor, and many would be very glad to have it entirely abolished. At Amherst they recognize it, and the head of the school was a volunteer officer, and he enters into it with the greatest spirit, and has an admirably trained company, and would be glad if all the rest of the States of the Union would do as he has done. He is quite enthusiastic about it. You know in this manner occurred the remarkable fact that the Agricultural College boys at Amherst—who are looked down upon, to put it mild, with a lack of appreciation—won in the University boat race. Yale did not row this year in consequence of some misunderstanding, and the Agricultural College bore off the prize by such long odds that one of the spectators watching the boat coming in so far ahead would not believe it was the winning boat, thinking they had not started fairly.

The Agricultural College folks are proud of it, as well they may be. I was curious to inquire the reason of it—whether it meant brain or muscle—and I learned that the winning crew were the best scholars on the list; also that they were young men, most of them from poor and needy families, who had toiled with their arms all their days, and who worked a great deal at farm labor, and in various other ways had strengthened themselves, although they had only ten days of drill to win the prize. If they should succeed in doing it three or four years they would not need any better advertisement, and the boys will leave the other colleges and come there. It has a bearing I think on the matter of manual labor and physical development.

We are very curious to learn what the experience of the West is in admitting women to the Universities, Colleges and Schools of Science. The question has come up in New England this autumn, at two universities, at Middlebury, Vermont, and Amherst College, and we are all of us looking with a great deal of interest to the experience of the West; though none of the New England Colleges have thus far admitted women to the privileges of instruction in any definite way.

These are some of the points which are interesting to us, and I think we should like to hear the views of various persons here assembled. I should sum all up by saying that there is going forward throughout the country a very great educational change; that side by side with the study of letters, and the classics, and the old, recognized branches of learning, other new branches of learning are coming up; that this study is pursued with us without hostility to other branches, and that science is studied partly for its own sake, partly for the sake of its uses, and partly for its means of disciplining the mind; that these colleges, as they are established, ought to have in every section of the country a peculiar and definite character; that the school in New Haven should be different from the one in Lansing—the one in Amherst different from the one at Urbana. It is desirable each region of the country should have that kind of scientific school best adapted to its wants, and it is desirable to confer with one another on all these minor points, in order to learn the best ways of arriving at the best results. I can say that at New Haven, where there are two colleges side by side, that the scientific has exerted a strong influence on the classical. We are able to do away with a great many traditional customs; the separation of the pupil from the teacher, and many other customs of the past. There grows up with us a much greater confidence on the part of the young men in their teachers, a familiarity with the young men on the part of the instructors, and out of it all has come a far greater love of study. The young men become enthusiastic and are delighted with their progress and the freedom from the petty annoyances of college discipline, which in the old-fashioned colleges have heretofore given so much trouble. I think the whole matter is one that ought to be encouraged. The question is put to us, "What are the results? What becomes of those boys?" There have been some statements made in reference to the results at Amherst College, which, I was informed there, are erroneous; but it is not the question what the boys there are going to do. It is a question which cannot be determined for several years. They must be out of college, and eight, ten or fifteen years elapse before we can tell what their work is. Time will decide. I think that is the only test that can be applied to these institutions as to what sort of men they will train up. When we have young men who have been that length of time in service, the world will know what they are.

At the Sheffield School, the character of the young men sent out is the best advertisement we have. A gentleman came from one of the neighboring towns a few weeks ago, and says. "I have brought my son to the Scientific School because I have seen boys attending the classical and the scientific schools side by side, and that is the reason I bring him here." Others take the opposite course. They may have a strong tendency in the direction of letters. There is our hope: that the results of this training will be good, and such as not only to reward us, but justify the country in these large expenses and very important modifications of the educational system.

Perhaps I have talked too long, but there is one further remark. There are some people who do not believe in these movements and sneer at them as the "new education"—that is the phrase used by many, as if that was a novelty. The best way to answer them is to tell them that 300 years ago the phrase, "new education," was used in England and in Germany, to indicate instruction in Greek and Latin, which met with the same opposition that we find now. They said it was heretical, and would take men away from the church; but in process of time they saw in Greek and Latin there were great elements of culture, and now they have entirely superseded the old metaphysical courses. As the world has grown, science has become a great department of human learning, and there are a multitude of things to be learned they had no suspicion of two or three hundred years ago.

President Welch, being called on by the chairman, spoke as follows:

THE IOWA STATE AGRICULTURAL COLLEGE

Was opened in the spring of 1868. Its income, amounting to $36,000 a year, is derived from the leasing of the lands donated by Congress. The college building, which is 168 feet by 110, was erected by the State, and cost $170,000. The building, which holds 160 students, has been filled to its utmost from the beginning, and the surrounding country, though sparsely settled, furnishes homes for about fifty more, so that the entire number in attendance is two hundred.

The applications for admissions each year have more than doubled the attendance, and if the facilities for board equalled the demand, I judge we should have five hundred instead of two hundred.

The first year there were two classes, being a Preparatory and Freshman class—about equal in number. Last fall the preparatory class was discontinued, except a few who failed of quite entering the Freshman class. We have now a Freshman class of one hundred, a Sophomore and a Junior class, thirty-five each, and some thirty who are preparing for college in branches in which they showed a deficiency last spring.

The courses of study occupy four years. They are largely scientific and industrial, balanced and relieved by such instruction in the German language, and in the English language and literature, as the time of students may warrant, and their tastes demand.

They rest upon the fundamental principles of chemistry, natural history and mathematics, which are strongly taught, and aim to present plainly the practical applications of those sciences to farming, gardening and engineering in its various branches, and to the other arts and professions of life. While principles are taught in the class room, they are carefully illustrated in the field and the workshop.

Two departments of study are organized, viz.: the agricultural and the mechanical, as required by the act of Congress making the land grant for the support of these colleges.

In the Agricultural department, four courses of special study are arranged—that of agriculture, horticulture, pomology and stockbreeding.

In the Mechanical department, likewise, four courses—that of civil engineering, mechanical engineering, mining engineering, and architecture, respectively.

For the first year and a half the several courses are identical, consisting of those studies which are preparatory to all alike, viz : Algebra, geometry, trigonometry and surveying; in mathematics, bookkeeping, freehand drawing, rhetoric and English literature, human physiology, general chemistry, and something of natural philosophy and botany.

From the middle of Sophomore year the courses divide, students in engineering putting their main strength into mathematics, mechanics and drawing, with practice in the field and workshop; while students of agriculture work more in the laboratory and the museum, making chemistry and natural history, including botany, their principal studies, with work upon the farm and in the garden.

To all alike are taught military tactics, and in their senior year the principles of intellectual and moral philosophy, logic, political economy and constitutional law.

Throughout the course the object is, on the one hand, to teach the arts—first in their scientific principle, and secondly in their practice, so as to make both learned and skilled workmen; and, on the other hand, to make good men and useful citizens, able to take their places in society, and perform their duties as such.

The students consist of both sexes. About one-fourth of them are girls and young ladies, who occupy rooms in a wing of the building.

The question has been frequently asked if, in schools where the sexes are educated together, young women show a capacity for study equal to that of young men.

From an experience of twenty-five years in conducting such schools, I can say confidently that the two sexes are of an average equality in their capacity for scholarship.

Some of our best students are young ladies.

One of our best manipulators in analytical chemistry is a girl of seventeen. Variation in natural ability is shown in different families, not in sexes. Our young women recite in the same classes with the young men and retain an average rank there.

Then, further, the presence of both sexes, under the proper system, makes the government less difficult and more wholesome.

Sexual isolation for the purpose of culture, is contrary to nature; it makes boys rough and girls silly. Of course we have had occasional troubles in government. What college does not? But such troubles are far less, as I verily believe, both in number and seriousness, than occur under the old plan of separating the sexes.

I am unqualifiedly in favor of co-education.

In the college building we have been trying a new experiment in government with entire success. Soon after the college was opened, I said to the students that the maintenance of order in rooms and halls was mainly their affair. I then proposed to them a plan of self-government, which was adopted, and at once carried out. There are several sections in the building, a section being composed of a single hall and its adjacent rooms.

The students of each section choose a captain and lieutenant, to take charge of the order and see that the study hours are kept.

A member of a council or court was also selected by each section, and this court meets twice a week to try all offenses reported by the captains, and if guilty, to assign certain demerit marks, which are reported to the faculty.

This simple plan for self-government has been pretty uniformly su cessful. It has saved the faculty all the petty annoyances which arise from the maintenance of police regulations, and its influence on the students themselves is very salutary.

I do not think, however, that it could be sustained without the aid of an enlightened public opinion on the part of the students.

We require all students to spend three hours a day in manual labor, and to meet this requirement we have a farm of 900 acres, 400 under cultivation; a garden of ten acres, an orchard of small and large fruits of equal area, a workshop, and a park of 190 acres.

We do not call this work compulsory, though all engage in some departments of it.

The daily labor is no more compulsory than the daily recitations, and the students come to both with equal cheerfulness, and have an equal freedom of choice as to what kind of work they shall do. We are striving to make, as soon as may be, all the work strictly educational. The student of pomology, for example, goes into the orchard and vineyard; the student in stock-breeding has the care of stock; the botanist works in the garden, and the mechanic in the workshop; and the young ladies, under a competent superintendent, do nearly all the labor of the kitchen, the dining-room and the bakery.

The clerks, librarians, fire-builders, bell-ringer and the cleaners of the public rooms and halls are all students, and the whole matter of manual labor, complicated as it is, seems, somehow, to get on with a good degree of regularity.

Of course it cannot be permanently successful without careful and constant watching, but we have never for a moment thought of abandoning so salutary an element in higher education. I am happy to say that though we are not quite three years old, so far we have realized our hopes, in numbers, and in the quality of students, in uniform manual labor, and in the co-education of the sexes.

Mr. Flagg—I want to ask the gentleman in regard to the price paid for labor.

Pres. Welch—The highest is nine cents an hour. If the labor is of that kind requiring skill and instruction—one of the nicer processes of the garden, for instance—we pay seven cents, but what is called the dead work is remunerated at the rate of nine cents an hour.

Mr. Murtfeldt—I believe Dr. Denison has some experience in regard to having both sexes in colleges, and I should be glad to have him say something about it. I will say, while on my feet, that the daughter of Prof. ———, at the University of Missouri, took off the prize as the best Greek scholar in her class, and she was at least one of the three best in the higher mathematics in a class of 30.

President Denison—I am pleased to know the question was settled in Iowa before President Welch went there. Previous to that time it was not quite settled. In Kansas the trustees were divided on the question of admitting ladies, and we frankly asked what right they had to exclude them, as the endowment was not given to any particular portion of the citizens. I agree with President Welch in his statements and reference to that matter. It is true that it requires care in government, but I believe, with him, that government on the whole is easier where the sexes are together, than it is where they are in separate schools. The system of education in Kansas is based on the idea that ladies should enjoy equal privileges with gentlemen, not only in the common schools, but the higher institutions. Our experience in reference to the ability of ladies to compete with the gentlemen, accords with the statement made by President Welch, and some of our best scholars have been ladies. We graduated this year four ladies and one gentleman, and in 1867 we graduated three ladies and two gentlemen. The ladies are interested in fruit culture, in horticulture—in fact, a portion of our ladies have been through Waring's Elements of Agriculture, in the agricultural class, and attended to it with interest. I believe this is the true course for the West, and I think the East is working into it. I have had inquiries from Amherst College with reference to the subject, and I doubt not these places will admit ladies before long. The single lady that appeared in the Michigan University, and was not excluded, won her way by her character, and obtained not only a standing for herself, but for others, and now there are thirty there.

Mr. Flagg—What is your experience with the labor question?

President Denison—I am sorry to say it is not the experience of President Welsh, and I congratulate Iowa on her success in this matter. We are working at it, and accomplishing something They had a great deal the advantage of us. The State gave them a building costing $130,000, making, in all its appointments, really about $200,000, and placing things in such a shape as to not only invite, but encourage labor. We began at the beginning; we were poor and had to work up; we now have a farm of 415 acres and are getting things into shape: so I trust our report on the labor question will be more favorable in the future than it has been. We have proposed to pay students for their labor.

The Chairman—We should be glad to hear from President Folwe-

IN MINNESOTA.

President Folwell—In my State there has never been any legislation on the subject of admitting women to the University. There is no such thing as sex known in the charter, or act of incorporation. They came there in the beginning and have been there ever since. It has been with us entirely successful. There have been some difficulties, but small ones; they do not begin to compare with those turning up every day in the old colleges, as President Welch has remarked.

The two sexes are mingled as they are in the family; we could make no separation owing to the structure of the building. Thus far we do not find the male students get the start of the young ladies. I have no doubt of the result of the experiment. The young ladies can take care of themselves up to that point; whether they can hold their own in abstract studies, remains to be seen. I think they will.

The manual labor question has not vexed us as yet. It strikes me it can be settled on general principles. Each institution must settle that for itself. In some places it cannot be practiced with success, and in some places not at all. President Fairchild, of Oberlin, wrote me that after an experiment of some years, they were obliged to give it up, because the expense of maintaining it was overwhelming. They ould not afford to provide the material for the students to labor. Our arm is a mile from the building, and only a few of our students live n the University Building. The farm is so far away students are unvilling to go to it. The Agricultural College was attached to the niversity, and buildings have been erected in the meantime. It vas not practicable to purchase a farm in the immediate vicinity, but ve intend to build there one of these days. It seems to me it will be roublesome to provide labor for a large body of students. I do not ommit myself on the question, whether it ought to be done. Some an do it, and some cannot. In principle it seems to me it is not neessary. I do not know we need a farm any more than we need a odel cotton mill or machine shop to carry on the corresponding ork in the arts; still it is convenient, and if it is possible, we shall ndeavor to conduct experiments in various departments of agriculre. It may not be possible to co operate thoroughly in all the exeriments proposed here. We are rather far North. Corn, for inance, is not a safe crop in Minnesota. If the frost holds off two eeks we shall have an excellent crop this year, but last year it was nall. We do not want to do much in winter wheat; it is not a safe crop and is raised very little. Each one must conduct experiments suited to his latitude and people.

I would remark that in Minnesota we recognize the fact that this grant of land for these schools was not given exclusively for agriculture, but the agricultural and mechanical arts and all industrial professions. Our University is located at what is to be very soon a great manufacturing center. There is water power enough running to waste to supply all the cotton mills in the country, and they are beginning to avail themselves of it. For that reason we shall be obliged to develop our department of mechanical arts somewhat in advance of the agricultural. We have in Minnesota sixty thousand square miles of as good land as there is out of doors, which needs no manure for years, and there is not that need of scientific farming in Minnesota for crop-raising that exists in many other localities.

I will allude to the military matter. When I went there two years ago, I found holding the position of Professor of Military Science, a retired officer who had been a Major-General of the volunteers. He remained with us but a year, and then left to go into some business, but during that period he conducted the military matter quite vigorously. He was a popular and successful instructor. Since then nothing has been done, and whether we do anything further will depend upon whether we can get a successful instructor. I cannot give the time to it myself to conduct the exercises, and we have no one else to do it. The practical proposition is this: That we bring the matter forward in a proper way, and ask Congress to legislate that the military exercises shall not be obligatory except when the Secretary of War shall detail an officer to give the instruction. When this is done I think we ought to be obliged to give the instruction; otherwise to do it or not, as we please. I have no doubt the intention of Congress was to make the military exercises obligatory, and I am fully disposed to comply with the letter and the spirit of the law. What we ought to do depends on what we can do, and that is what we shall do in Minnesota if we get an officer that will carry it out; if not we shall wait awhile.

I want to make one remark on the matter of secondary education. I think this is the great want of the country just now, and we are doing in Minnesota what we hope will stimulate the development of the secondary schools. I think we make a mistake in organizing the agricultural colleges as academic institutions with a little seasoning of technical studies. I do not believe in inviting our farmers to receive a farmer's education as such. The farmer, if he is to be educated will need the same kind of education as others; he wants to be a man as well as a workman.

We, therefore, propose this to the educational men in Minnesota: that they develop the high schools of the State as rapidly as possible to do all the work up in the end of the Sophomore year. President Angell proposed, in his address at Ann Arbor, that the high schools do all the Freshman work very soon. We have proposed that to the high schools of our State. When this is done, the University will be delivered from a great deal of work which belongs to the secondary schools. We propose to start our Agricultural College from this common basis to secondary schools, and make it a technical school of agriculture and the mechanical arts, and not simply higher academic. In the meantime what we shall do is what we can do. I propose, as a practical thing, to assemble this fall a class of any number who want instruction in agriculture, for the purpose of practicing it. We shall give no degree to a student in that department unless he has a good general education. I should be glad to answer any questions.

President Denison—Let me ask in reference to training in your secondary schools. So far as I see this can be apcomplished in your chief cities and principal towns, but when you get out into the country towns, which need the benefit of the agricultural department, they cannot have the benefit of the schools, and unless the institution adapts itself to them, they go unbenefited.

Professor Folwell—That is quite right; we recognize that fact, and are maintaining a preparatory department intended to meet the wants of such schools. Our rule is this: that the University begin almost where the high schools leave off; we intend to work in harmony with them. We have this advantage, that we have rather a clean sweep in no competing institutions; we propose to leave the secondary work to the public high schools and the denominations. I have long been of the opinion that the division under the last grant was unfair. It was made in 1862 on the basis of the thin population. Since then Minnesota has doubled in population, and has acquired one additional representative, but we have got no more land for the college. It seems to me such a basis of division never could be fair. I have no plan just now to propose, but certainly a better one might be devised. The State of New York has 46,000 square miles of land, and she gets 990,000 acres of land. What does Illinois get? 480,000 acres, and she has 55,000 square miles; Minnesota has 83,000 square miles, and gets 120,000 acres. It seems to me the opposition which might arise in changing this matter can be met. They do not like to have scrip located in the States.

MISSISSIPPI.

Professor Hilgard—Our scrip was only issued a short time ago, and has just been sold. The scrip has been divided between the white and colored universities. The University of Mississippi, which is to be continued, has been allowed two-fifths of the agricultural fund, while three fifths is to go to the Colored University. I was requested to learn as much as possible by the Board of Trustees, and especially in regard to the labor question, about which we have been a good deal exercised—I think unnecessarily. I think at the present time it would not be at all difficult at the South to get as much labor as would be desirable for the purpose of illustrating the principal portion of the course in which the student may be at the time. There is one difficulty, however, which I perceive is not very much insisted upon by the gentleman who first spoke; that is, that of government. Most of the gentlemen have spoken on the supposition that the students were located in dormitories. We have about come to the conclusion that the dormitory system was impracticable, and intend to abolish dormitories, or introduce military discipline. It is proposed by our trustees to have the agricultural students remain in the dormitories while the other students are free to go where they please. I would inquire whether any such separation of the two classes has been introduced anywhere else, and especially in the University of Michigan, which has had the largest experience? It seems to me injudicious, but it is likely to prevail, and I should be happy to have any suggestion on the subject I believe any such distinction between the students would be injudicious and unnecessary, to say the least.

ILLINOIS INDUSTRIAL UNIVERSITY.

The Chairman—In regard to the questions that have come up, they have all been interesting to us because we have had the experience that has touched on them. We have recognized the fact that the grant itself is designed not for agriculture alone, but for all scientific education, and especially scientific as applied to all the arts. So we proposed the organization from the outset, not only of an agricultural college, but a mechanical college, and we have now several distinct courses, all of them looking to certain recognized professions and pursuits in life. We have two courses in the Agricultural College, a course of Agriculture and a course of Horticulture: the Agriculture embracing two branches, plant husbandry and animal husbandry; and Horticulture embracing not only ordinary garden culture, but nursery work, orchar work, forest planting or the care of green houses. We have all of these departments, indeed, in successful operation in a small way. We have a market garden and a nursery, and a large fruit plantation—perhaps as large a variety in our orchard as will be found in any one orchard in the country. There are about 3,000 trees and about 1,400 varieties in apples. We have several hundred varieties of pears, and a considerable collection of the small and other fruits. We have the trees there in nursery, or already in field, and have a forest plantation to experiment with, and some thirty sorts of timber trees, selected by the best authorities as being promising for timber groves on the prairies. We have also green houses which are now particularly under the care of the young ladies. We have also a course in mechanical engineering, a course in civil engineering, and some who have begun the elementary parts in a course of mining engineering. We have a course in architecture, and two or three students have entered, and we are making provision for a full development of the course. We have a course of applied chemistry besides the analytical course, and we have also a commercial course. The teacher is a gentleman who was for some time a teacher in one of the commercial colleges, but of more liberal culture than many of them, and gives instruction in the branches suitable to fit a man for commercial life. We have, in addition to that, a military course partly developed. The students in the military course have simply been in some text books in tactics. I should have said at the outset that we adopted the voluntary plan as to study; that is, we threw the whole field as far as we could open, and allowed students to select their own courses and their own studies in the course. We have several recommended courses that we put in the hands of the students, and say to them if they have no choice of their own they had better take that, and they have largely followed the course advised They are most of them four year courses. We do not confer degrees. The members of the Legislature visited us during the last winter, and asked the question whether we wished to have our law of organization modified so as to give us the power to confer degrees. I told them I had no care in the matter; that for a year or two, until our reputation was perhaps wider, it might be a little benefit to us; in the long run we hoped to make the certificate we gave of equal value, and did not care to confer honorary degrees. We have a sort of diploma which states that the student holding it has pursued a partial, or full course, in the different departments he has chosen, and attained a certain percentage of scholarship in the studies mentioned, and there is enumerated in his diploma everything he has studied. So every boy's diploma will certify as much as he makes it and no more.

We have dormitories. I wish we had none, but they were given to us, and we use them, of course. We could not use the building very well for anything else. In the management of the students who occupy the building—about 150—we have adopted the same plan that President Welch has adopted. I said to the students, after one year of governing the institution by the Faculty, "You are young Americans; you expect to govern yourselves and will be governors of the country by-and-by; why not begin now?" We offered them at their option the privilege of undertaking their own government in the Institution. They had a meeting and unanimously voted to undertake the government. We have a semi-military organization as we have had from the outset. Every corridor has its Hall Sergeant, whose business it is to assemble the men, lead them to the chapel, etc. I suggested that they should appoint a council, and a council of five or six men was appointed with a president, who act as a court, the Adjutant of the building being the chief executive officer. The Hall Sergeant in each hall reports any offenses to the Adjutant, and they are then tried by the court. They have appealed to me but two cases only in the whole time. Shortly after the opening of their government, they said they had caught in one of the rooms a number of boys, with some one fiddling, having a dance, and it was against their rules, and asked what they should do in the case. I said to them, "Is it a violation of the rules?" They said, "Yes." "Can you prove the guilt of the parties?" "Yes." Said I, "Then there is no option; you must enforce the law." I never heard anything farther about the matter. The other case that came before me was that of a young man who declined to pay his fine. They didn't tell me what his offense was, and I did not ask, but told him he must obey the rules, or leave the school. They have written out their constitution and by-laws, and put them up in the library, and govern matters their own way. I must say it is well governed, and better than I could govern it with the whole Faculty.

I want to say there has been in the State thus far a pretty good feeling—much better than I could have anticipated—between this and the other institutions, and I do not think there is very much danger of any rupture of the harmony. I have said, whenever I meet gentlemen of the other institutions, the only difficulty, I suppose, that would occur, would be a little feeling of jealousy for fear one institution would get more than its share of patronage. But there is a plenty of material to fill every college of the State. We want more educated men everywhere, and would not have enough if every college in this State was crowded to the utmost, and there is no room for jealousy.

The first two years of the history of the Institution we had no young ladies; they were not admitted. We were not provided with conveniences for them, as we are not very well now. Although the arguments *pro* and *con* seem to be so equally balanced that I did not think it was a matter of much consequence either way, my own private conviction had been that while I believed in the entire capacity of young ladies for a college education, I do not recognize any great difference, for I have had young ladies go through calculus and other departments with as much success as others, and as to their need of education, I do not see any difference between the sexes; if anything, I would rather give education to the women than the men, and as to their right to education nobody can question that. Still I have always felt disposed to say this: if you are too poor or too mean to give to women equal institutions, then let her be admitted to the best you have; but my own impression was, if the nineteenth century would do what it ought to do, it would endow its woman's university with as broad a basis as that provided for young men, but if you cannot do it, give woman the best education you have. When it came to a vote, the committee who had it in charge being equally divided, I gave my voice in favor of their admission. I have some daughters of my own I love too well not to wish to give them all the advantages possible. I knew before hand there were great advantages in the way of government. The influence on each other of the sexes is certainly good. We have several ladies in the chemical laboratory doing themselves and the studies good justice. Several of them are interested more or less in some of the practical studies. I suggested to our gardener that the young ladies go into his green-house under his supervision, and they are doing in term time a large portion of the work. There is not much done in New England by ladies in farming, but I recollect meeting, on one of our excursions, a New England school teacher who had come here and bought ten acres of land, and I found her out with big mittens on, with her hired man, at work raising fruits and garden vegetables, and making money. She had not had the benefit, even, of an agricultural education, but was working out her destiny because she had worn out her health in the school rooms of the East.

The question of labor, our friends all agree, is a difficult one. One might come in here and ask us the question, "Why are you troubled thus about it? Why don't you give it up if it costs so much trouble?" At the outset I gave you our history. We undertook the labor system;

I believed in it. We went on to the ground and helped the boys with a great deal of work. We graded our grounds, laid out our walks, plants, trees, built fences, put down walks, and did a hundred things, and are still doing many things; but we found that it was impracticable to furnish labor for the great number of students that were coming to us. We paid them for their labor; twelve and a-half cents was the maximum, and from that to nothing, according to their skill. We finally abolished the compulsory system, and at the opening of the term, after organization, we said to them, "All who wish can join the labor classes—and we emphasize the matter a little of joining the classes, and throw the influence as far as we can in favor of labor—please to hand in your names to the proper officer, with the work which you have been accustomed to do, or which you wish to do, and the hours of the day at which you will be at liberty." Then we organize three labor classes to labor two hours each—one from ten to twelve, another from one till three, and another from two to four. We leave the house between four and five for general lectures, drilling and other exercises. Then we take the labor class of the morning, and distribute them to the garden, to the ornamental grounds, to the shops—to wherever we may have labor for them; and we do so with the afternoon classes. They report to the Superintendent in charge, and are expected at the proper hours to appear on the grounds. In the Mechanical Shops we work under the same system, except in some parts of the work we allow piece-work—that is, giving them a piece of work to do, and the Professor says, "That is worth so much," allowing them to take their own time about it. In the Mechanical Course, I would say, inasmuch as it requires a great deal of instruction at the outset, from skilled men, they are required, for three terms of their course, to take shop practice, just as a student in chemistry takes laboratory practice, for which he gets no compensation.

Why should we keep up this? To my mind, these are the real reasons. In the first place, the labor system with us has an advantage in allowing poor young men to help pay their way. A great many young men come to us absolutely penniless, and actually pay all their expenses during the whole course. It may be true that we have more of that class of students out West, and yet Professor Felton told me—I think it was he—that the glory of Harvard was in educating so many poor young men; but there they have scholarships, and many advantages in doing this. We cannot afford to carry it on simply for that alone, although we ought to tax our patience urgently and funds a little, to help young men get an education. We do not expect, of course, that a man who has spent four years in scientific study, will go out as a day laborer on the farm. They will work with their brains, but after all it is necessary they should know practically, and they never can do it except by labor. We find this—that a practical application in any of the exercises as well as in any of the arts gives a practical and correct judgment of the value of the facts in this science. To illustrate what I mean: To the student, the principles and the facts of the science of the facts in the books are on a dead level, and it takes as many lines of the book to describe a fact, as it does a controlling principle; the teacher may distinguish the difference, but the pupil does not. When he sees the practical application of it, he knows it at once. There we have another objection. In the study of natural history and the sciences of observation and experiment, we make a mistake in setting them to learn that from books. When he studies natural history, he studies what cannot be put into a book, but is outside of it. I recollect with what eagerness, when I had been poring over Latin or Greek for so long, I commenced the study of Geology and Botany, and the interest with which I went about it; but this zeal evaporated in nine out of ten before we had been three weeks in the class, simply because we were studying not Botany, but descriptions of Botany, and in these schools you will be obliged to show these applications not simply with the eyes, but with the hand, and failure will result unless they receive that training that comes alone from the practical adaptation of means to ends. If I take a theorem in a book, and my pupils learn it, I am never quite certain that their judgment has been precisely correct, but when a man makes a judgment in regard to the direction of forces to split a stick of wood, for instance, the next blow tells him whether his judgment was right. The men who are leaders or forces in this country—I do not care in what department—are, in nine cases out of ten, men who some time in their life, probably before they went to college, knew how to work, and were trained to work. I am solicitous for one, as I suppose you are, that our Industrial Universities shall send out characteristic men without titles or degrees, but with education, to take their place in the ranks. I have an idea what I want them to be—not mere fluent talkers; I would like to have them speak respectably if they have anything to say, and know enough to keep still when they have not—not merely men who can chatter about science, but, with intelligent and practical minds, can do whatever they are required to do, wherever it is—intelligent, able, working men, who do not feel above labor, but regard it as one of the incidents of life, and one of the necessary results. A great many of the students do not work, but there is no man among them that does not honor work, and no one hesitates to put on his old clothes and march out with his spade or hoe and work. They know all of us honor labor as the means by which the vast millions of the family of man must be sustained with daily bread.

I think I have touched all the points called out by the speech of my friend, with this exception: there has been the most enthusiasm in the Institution in the studies, of any school I ever knew, and there have been the fewest laggards, and the least disposition to shirk work. They said to me: "If you make the studies all free, you will have the boys come in and take the things that are easy, and leave the things that are hard." They take the things that their good common sense tells them are the things that will be the best for their future power in the world. They will take that thing which tends most directly to the end, if they have to stand on their heads to study. There is no danger in throwing up the whole field of labor, and saying to young men: "Take what you want, what you have time for, what you need." The result has been a very rapid growth of the institution. I ought to say perhaps, here, we have not felt ourselves compelled to follow New England, much as we honor her, but we have felt ourselves at entire liberty to build up an institution for Illinois. We have not asked ourselves the question, what they require for admission, but what the young men are prepared to do, and what they will do, and what we can do for them. They may not travel over a four years' course, and they may not begin as I did, or end as I did, but the education will not be determined by the point they stop at, but the distance they can climb afterwards. If you will give us time, I think we will successfully compete in the ultimate standing our young men will take—at least, I have no fear of them, and am ready to take the young men as the schools of the State will furnish them to us.

In regard to the military education, I do not know what was the intention of the law makers. We are taught not to go behind the statutes but take them as they are. The law says, we must not omit military tactics. We organized, and were fortunate in having for our teacher, Professor Snyder, who was here to-day, but has now gone—a gentleman who was in the Polish army, and afterwards in the Austrian army, at the great battle of Solferino, and afterwards in the service of this government. He organized a university battalion and four companies, and successfully drilled them. We took this ground and I am glad to take this occasion to say we have held on patiently, hoping for something. I know that the military drill, after the novelty has worn off, becomes a little tiresome, and it requires effort, enthusiasm and ability on the part of the instructor to keep it up, but it can be kept up. All our students drill. These companies are under the immediate command of the students who take military tactics as a study. We shall open on the 13th of September a drill hall, 60 feet by 120, with a large platform, giving space for 300 spectators, and also a lower story devoted to large machine shops. I am delighted with the success we have met with in the teaching of mechanical engineering, in a practical way. I inquired of the schools I saw abroad, as to that point, and found they had tried shops, and in most cases abandoned them, but the difficulty they had was this: their students never expect to be laborers like ours; they simply expect to be mechanical engineers, and have charge, in the way of superintendence, of large manufacturing interests, maybe. But this matter of labor is of great consequence. I said to our Professor, "We have $2,000 to buy books and apparatus to illustrate mechanics." He said to me: "Let me make the apparatus we want." I said, "Very well, if you think you can make it as quick as you can buy it, do so." There were several applicants for the course of mechanical engineering. He went into a vacant shop that he got, bought some tools, and made patterns of a steam engine. He wanted one of peculiar construction for illustration. When he got it at work, he wrote to Mr. Corliss, the proprietor of the well known Corliss engine, for the privilege of making the valve gear, of the Corliss pattern. Permission was given, and he sat down to make his drawings of the valve gear adapted in size to his own engine. He invented a better one, and obtained a patent on it—better than the Corliss invention, because it does better work and is cheaper; the whole engine can be made as cheap as the Corliss cut off. They made our apparatus of various kinds, put steam heating into the building, and various other things. They are making castings for a 20 horse-power engine that they say shall run so smooth that standing with your back to it, you cannot tell whether it is running or not. The beauty of it is, that it has inspired such intense zeal, that every old book of mechanics in the library has been rumaged, and we have been obliged to send abroad for books. They have taken out patents, and one of the students has rented a shop, and is making a patent windmill. I am delighted with the result of this shop practice.

LABOR FOR STUDENTS.

Mr. Roberts—Mr. Chairman, I have been quite interested in your description of the working of your Institution, and I wish to say that we have succeeded in nearly the same way. I have been connected with the institution only about a year, but have had much to do with the students on the farm, running a large farm almost exclusively by their aid. Last year we tile-drained considerable, and much of that has been done by the fathers of these students when they have returned home and explained its benefits. The result abroad, also, has been similar with regard to deep plowing. And I claim that these are the influences, to a very great extent, that are to go out from these colleges. We are not only to continue to send them out, but they are to be teachers, and they are doing it, to my knowledge. I have received quite a number of applications from the boys, for some of the wheat which they helped to raise. In these, and many other ways, they will scatter the information they have received at our colleges, and in that way help to inspire a proper appreciation of our efforts.

Pres. Folwell—We find difficulty in furnishing work. I should like to know what kind of trade or manufacturing business I could start, to employ the young men. If I had an employment for 100 young men, at which they could earn their living, it would be of great service to those whose means are limited. The practical question is, what we shall do.

Mr. Roberts—In my experience during the last year, our boys have constructed fence. I let it to them by the job. We make all our fences in that way. Our students milk forty odd cows, and they take care of the cows; and, in addition to that, take care of quite a number of head of blooded stock, in connection with their lectures on stock-breeding. You can tell the students the difference between the harsh and soft feeling of an animal, but he cannot understand it without the examples before him. We plant all our corn by the help of students. I can get more work out of a squad of forty students, for two hours and a half, than from hired men. In some kinds of work there is a profit; others result in loss. Certain kinds of work can be done—cutting corn, for instance. We cut corn two cents a shock cheaper than we could by outside help. We shall have this year some 5,000 or 6,000 bushels of corn, in all probability. Our churning is done by the students; in fact, we use them in almost every place. As I came away, almost the last thing was to give some direction about hauling wood for the bakery, and the students cut the wood at so much a cord. Sometimes the students want to work half a day. They come in the morning, and are ready to start at seven o'clock; instead of having a dread of work, they are anxious to do extra jobs. Most of them are limited somewhat in their means, and when at the first of the month they are able to reduce their expenses for the past month, by six, or eight or ten dollars earned, it aids them very much.

Dr. Miles—I think that in the practical departments, labor cannot well be dispensed with. Students who are at work on the farm take a greater interest in the study of agriculture. There are many topics which are difficult to teach in a satisfactory manner without actual illustration before you. Take, for instance, some processes in the laying of tile drains, putting it down in quicksand, etc. You may lecture by the hour, and still the student does not appreciate the importance of the directions given. Put him in the ditch and he sees at once how it is, and he takes a greater interest in the lectures. So, in regard to stock. We look upon our farm stock as the means of illustration, as much as anything in the apparatus. Lectures on the different breeds of stock cannot be appreciated unless they have the animals before them. There are certain peculiarities you cannot well describe, but you can point them out. Our students do not object to any kind of labor. We do not set the students at work that they understand, but at work that they do not understand. We do not in this labor have reference to the gaining of manual dexterity merely, but we want the student to continue at the particular kind of work until he understands the manner in which it should be done. This season we have put up a large building; the students laid the foundation, cut the timber, took it to the saw-mill, and put it up, and they feel proud of it. Although we may never work at the carpenter's trade, yet when we have buildings to put up, we shall know whether they are properly constructed.

The Chairman—The question that Pres. Folwell suggests, is a practical one—what to provide. I can see the time will come when all the fences will be put up that we want—all the buildings required will be finished, and when, for instance, all our underdraining, which we have used largely, will be done—when there will be no work of that kind. The question, I think, ultimately, will come down to this. We will be obliged to resort to work whatever we have on the grounds available for the students in that apartment. That is, the agricultural students will have whatever work we have on the farm, the horticultural students work in the garden, and the mechanical students, the work of the shops. I think all of us will be obliged to relinquish the labor system, except the ordinary work. In Kentucky they have a large wagon manufactory connected with their Institution. The trouble is, the mechanics of the State will find just the same fault with your attempting manufacturing, that they do now with reference to its being done at the Penitentiary. It is going to be very difficult, ultimately, to manage the work.

Dr. Miles—Before adjourning, the Committee on Programme would make their report for the order of the day (to-morrow), as follows: At 9, A. M., "Experiments on the Pennsylvania Experimental Farm." Discussion to be opened by Professor Hamilton, of the Pennsylvania Agricultural College. At 2 P. M., a paper by C. W. Murtfeldt, on the "Agricultural Colleges of Europe and the United States."

At the suggestion of Mr. Murtfeldt, the reading of his paper was changed to 9 A. M., instead of 2 P. M.

The Convention then adjourned to Friday, August 25th, 1871, at 9 o'clock A. M.

FRIDAY, AUGUST 25, 1871.

The Convention met pursuant to adjournment, at 9 o'clock A. M., President Gregory in the chair.

The President read the following communication from M. C. Fernald, acting President of the Maine State College:

> GENTLEMEN: I regret very much that our college cannot be represented in the Convention to be held at Chicago, commencing the 24th inst. Its object I recognize as of signal importance. I had hoped to be present, but find I shall not be able. Shall learn of its proceedings with interest. Most truly yours,
>
> M. C. FERNALD,
>
> *Acting President Maine State College.*

The Secretary stated that the first thing in order, according to the order of business, would be the reading of a paper by Mr. Murtfeldt on the "Relationship between the Agricultural Colleges of Europe and those of America."

The President—While we are waiting for the gentlemen to arrive, I would say to the Convention that we have, in addition to the invitation to visit Riverside—which I laid before the Convention yesterday afternoon—an invitation which has been brought in this morning by the Commissioners of the Land Department of the Illinois Central Railroad, for the members of the Convention, or as many as may find it convenient, to take a trip along their road. They offer to put at the service of the Convention one or more sleeping cars, or a special train if it is necessary, to take us down any distance, and on any part of their road, stopping where we please, and connecting with such trains as we may please.

We all know that the Illinois Central Railroad Company, in addition to being a railroad incorporation, has had a very large share in the work of increasing the agricultural population of the State. They hold a large amount of the farming lands of the State. They have, through their labors, succeeded in settling a large portion of the State, and they have still some hundreds of thousands of acres of the best land in the State in their care, and are interested very greatly in the agricultural prosperity of the State. There are a great many points of interest along the road. The State Fair at Du Quoin and at Champaign could be taken in on the route. We who are from that place, would be very glad, indeed, if the gentlemen of the Convention would accept this invitation and stop over and see us.

The consideration of the invitation was postponed, to permit Mr. Murtfeldt to read his paper.

Mr. Murtfeldt then read his paper, as follows:

AGRICULTURAL COLLEGES IN EUROPE AND THE UNITED STATES.

The precise time when agricultural schools were first introduced in Europe I have not been able to learn, but with the primary object of their establishment I am sufficiently familiar to venture an assertion. It seems to have been clearly understood, however, by those, who inaugurated training schools for farmers, that the educated agriculturist has in every respect the advantage over the man who has no clearly defined purpose in his labors, who does not believe in rotation of crops, who has no accurate knowledge of the adaptation and capacity of the soil he cultivates, or of any of the known laws of the climate in which he lives—in brief, whose whole business is carried on hap-hazard. If these facts are admitted in America I answer, possibly in theory but not in fact, without stopping here to argue the point. Now as to the assertion.

In Europe, Kings, Princes and Barons hold many landed estates. Some petty Princes, the whole of whose territory is not as large as that of a single county in Illinois, own a hundred estates, varying in extent from four hundred to a thousand acres each. Now, to have these domains as productive and to make them yield as large a revenue as possible, these Princes needed stewards, or as the Germans say "*Verwalters*," which term implies, not only a skillful agriculturist, but also a man of considerable executive and administrative ability. These Princes being able to control the schools, they wisely concluded to educate a class of men whom they could appoint over their estates. Such positions, being entirely dependent upon the good will of the appointee, remunerative withal, and not very wearisome to the flesh, are much sought after, and are of themselves stimulants to the incumbent to make as good an exhibit and as large returns as possible. That the best of these schools, or perhaps all of them, are now established upon a broader and more cosmopolitan basis, may be taken as an index of general national progress.

The act passed by the Congress of the United States donating public lands to the several States and Territories, which would provide colleges for the benefit of agriculture and the mechanic arts, approved July 2d, 1862, has called into existence quite a number of institutions, most frequently termed Industrial Universities, some of which are represented here to-day. Prior to that day there were in the United States no institutions of this character, of any note. With the creation of schools of agriculture came the demand for Presidents or Regents of these Universities, and also for Professors of Agriculture. There being no normal university of agriculture in the United States, where men could be trained for the teaching of this science and art, men who were favorably known as Presidents of colleges, or educators, were pressed into service, or where the industrial schools were united with colleges already in existence, the Presidents of these became *ipso facto* Presidents of the industrial universities. Doubtless every one of these gentlemen have all the executive ability and literary attainment desirable in a college President, and yet we look for something more in this connection, something more in sympathy with the agriculturist and the mechanic, or in fact with all the laboring classes. So with the Professors of agriculture; there are yet but few, even of these, who studied agriculture with a view to be able practically to teach the science and art. There are perhaps plenty of men well qualified to teach agricultural chemistry, or botany, or horticulture as a branch of agriculture, and many of these have already been incorporated into the Faculty of industrial universities. Thus a corps of Professors have been created out of material not originally designed for such a purpose. It is not the intention of this present paper to question the ability of any one of these gentlemen. All that is desired is to bring out the fact that many of the gentlemen who compose the Faculties of our industrial universities, had no intention to labor in this particular field ten or even five years ago. Furthermore, to show in the sequel that men especially trained for other pursuits frequently adopt that of agriculture or horticulture from an innate love of the calling, and that such, because of their scientific training and powers of observation stand at the very head of the agricultural profession, need I refer to the doctors of medicine, law or theology, (some of whom are here today), who have abandoned their first love to follow *Ceres*, *Pomona* and *Flora* through the more enchanting fields and gardens where they reign ?

The government military school at West Point and the naval school at Annapolis, demand of each and all the cadets and scholars conformity to *all* the rules and regulations of these institutions respectively. At West Point studies adapted to the various branches of the service are taught, whether of infantry, cavalry or artillery. Nevertheless, the graduates of West Point are not all found in the service; some are civil engineers, others presidents or land agents of railroad companies, and some, even, are plain farmers. In any emergency, however, each and all of these graduates of military schools can readily go back to the calling for which they received a special training—can even lead armies and become Presidents of the United States.

I have referred to this matter here to answer an objection not unfrequently made to our industrial universities, namely: there are but few students in these institutions who intend to follow agriculture as a life business, and that therefore they need not be taught to labor while at college. I maintain the opposite. They, like the cadets in our military academies, ought to be made to conform to all the rules; they ought not only to study the theory of agriculture but the art also, and that *practically*. After that, let them choose any other field or profession if they desire. The advantage and influence of their practical training will prove no loss, either to themselves or the community at large.

The labor question, therefore, should be answered affirmatively. Most men labor for money; they strive to attain wealth (even more than a competency) because with money as a means, men can accomplish much; if this be trite it is also true. But a man may possess all the wealth of the Californias, and not be able to tunnel the Chicago river or bridge the Mississippi; it takes knowledge to do this. "A fool and his money are soon parted," whether he attempts to bridge the Mississippi or carry on a farm. In the West we have thousands of illustrations, where sagacious, skillful farmers have made fortunes in the same special pursuit where others, without the requisite knowledge and skill, have utterly failed. Few men succeed in any calling which they do not like. There may be some young men in these industrial universities, who enter there at the wish of their parents, without any desire to become farmers; but most *men* at the age at which they enter a university should and do have a definite idea of what they intend to follow as a life pursuit, and therefore it is presumable that those who take the agricultural course do so *con amore*, and intend to become farmers. But there are some men who are easily influenced by others, especially by men whom they esteem or to whom they look up, and therefore the Presidents or Regents of agricultural colleges, and all the Professors, should be wholly in sympathy with the industrial classes, especially the students, so that these may have set before them the proper motives, which shall establish in them the firm conviction that they can succeed in life as agriculturists better (or at least full as well) as in the so-called professions, which are already overcrowded, and which men, whose special training has fitted them for these professions, are charged to especially favor. We claim then the industrial universities primarily for the industrial classes, because there are plenty of other colleges and universities where men can be trained for the profession; and entertain the hope, that all who are called to preside over or teach in them, will use all their power and influence to hold the trust committed to them SACRED TO THIS PURPOSE.

PRACTICE AND SCIENCE.

Mr. Murtfeldt—I will say that a good many of the points that I have endeavored to bring out, have already been traversed in the discussions of this Convention; the Labor question, and several others. I did not know exactly what form this Convention was to take. I knew that part of the object of the Convention was to concert action with regard to experiments to be tried. I had hoped that I should be seconded—if we are going to allow any division between the scientific and the practical men in this connection. I had hoped that I should be seconded by such men as Mr. Flagg, and others. Mr. Flagg, I believe, is a college graduate. I want to impress upon this Convention this idea in regard to these industrial classes, and the money given to them by the United States, and which is held in trust for them. And that is the point I want to bring out especially. It is the money that is given by Uncle Sam to industrial classes, and the attempt to divert this money in favor of the so-called "classical" institutions, solely to bring them up to that standard—if it is up—which I do not exactly agree to—to bring them up to that standard that they will watch you very jealously; and when attacked that way will call pretty loudly, from the press first, and then from the farmers themselves.

I have been very much pleased with the spirit that has been exhibited by the gentlemen here, and if I could have intruded myself upon the Convention after the very pleasant, agreeable and sensible talk that we had last night, I should have called attention to this fact then.

In the New England States, according to Prof. Gilman, the most of the benefits and emoluments received from the land grant are already diverted. He says we draw upon the farmers for our students, but we do not return many to them. We have few agricultural professors in our institutions, and half as many students.

I simply want to call the attention of this Convention to the fact that the farmers are jealously watching these grants, every single one of them.

And perhaps there has never been, in one sense, a more important Convention called in the United States, than this very one. A great deal depends upon the experiments that are being tried at the experimental stations—for in the end our Agricultural Colleges will amount to nothing but that they will be experimental stations.

Mr. Flagg—I wish simply to refer to the gentleman's allusion to me. I heard my name mentioned, but I did not hear what was said. I do not know but that he misrepresented me. I am very anxious to have my record clear.

Mr. Murtfeldt—I will inform the gentleman that I want him to take the stand at the unscientific side of this Convention, or I will find myself alone. He being a graduate, went over to the college side of the question.

Mr. Flagg—I want to be, and I think I am a more practical man than Mr. Murtfeldt. I think I always have been. While he has been theorizing here with regard to the encroachments of the classical, or college-bred men, if you please, upon the domain of practical life, as they claim, I, who am but a representative of a great many other men who have the same opportunities, have been working I think perhaps fully as much as he has, and I believe a little more, to the practical ends of agricultural education.

Now the statement that was made here last night, I believe, by Prof. Gilman, (if he did not make it here he made it elsewhere,) in regard to the small number of agricultural students who are graduating from Sheffield Scientific School, is in itself no proof of failure. I think Mr. Murtfeldt himself will admit—if he will not, certainly a large portion of the men in this room will—that Prof. Johnson, in his "How Crops Grow," and "How Crops Feed," is doing more to advance agricultural interests than any man in the United States.

That is my solemn belief, and I don't care in what way this work is done; whether it is done by taking students into the school and sending them out as graduates, or whether it is done in the way in which Prof. Johnson has done it; so the work is accomplished, I think we ought to be fully satisfied. I think there has been nothing more practical or more valuable for getting our general agricultural practice upon a scientific basis, than those works by Prof. Johnson. I think this country owes a great debt to Sheffield Scientific School, and I think Mr. Murtfeldt himself will take that view of it. But I don't think it is right to attack Yale College or any other institution that is doing as much in a different way towards agricultural science, with the plea that it is unpractical.

Mr. Murtfeldt—I did not mean to be so understood, sir. I simply quoted Prof. Gilman.

Mr. Flagg—I am a Yale man, and I sympathize with young Yale, too. I believe that Yale is all right, and so is Harvard. I believe, although those are classical schools, so-called, that they are doing their work, and doing it well for the practical men in this country.

Mr. Denison—The law of Congress places the matter in this form. These Institutions are endowed to teach (not excluding other scientific and other classical learning), such branches of learning as relate to the Agricultural and Mechanical Arts, in order to promote a liberal, practical education in the industry of life. I suppose that Mr. Murtfeldt will not exclude the classics?

Mr. Murtfeldt—Certainly not, sir.

Mr. Welch—I am a little befogged in regard to the exact distinction drawn between the scientific and the practical. I think I have never been able to see it. I think that the usual distinction (which I do not believe is well founded), is about thus: There are a class of men who have no knowledge of abstract science, who have become, by long experience, skillful in the manipulations of the farm, and they call these practical, and they have knowledge, no doubt, of an exceedingly important part of farming. Then there are men, on the other hand, who work in the laboratory, who are skillful botanists, and who have accumulated, by life-long industry, great knowledge in these departments. Now, I hold that those men that determine the principles that can be applied on the farm, and that indeed form the basis of all genuine progress on the farm, are just as practical as the other class. [Applause.] So I have long doubted the wisdom of giving to one class, viz: the workers—I mean the muscular workers—all the credit of having the only practical men, and on the other hand, I have doubted the justice of giving the intensely earnest workers in the laboratory and in science, the credit or discredit of being the only theoretical men. Of course, the so-called practical men—the muscular workers—cannot do without the scientific workers, because there would not be any greater genuine progress without the application of scientific discovery to the work on the farm, in the garden, or in the work-shop. Indeed, there could not be any real progress without these scientific, practical men. And, on the other hand, the scientific, practical men never could reduce their experiments, their discoveries, to practice on the farm without the muscular workers. So I believe that all these men are practical men, all of them.

I heard yesterday a sentiment that I (and I speak with all deference to the speaker) did not like. I have forgotten who the speaker was, but the sentiment was in derogation or deprecation of the idea that a school should have a sprinkling of agriculture.

If I may not be too egotistical in reference to our own laboratory, I would say that we have there a two and a-half years' course in analytical chemistry—in experimental chemistry, at any rate. Well, I might call that a "sprinkling of agriculture," and a pretty large sprinkling, too. It is true that the analyses do not always point right to the farm, but they always have a bearing upon it, and the truths of science are intimately connected together. You cannot teach a boy one experiment in the laboratory, or any manipulation of the laboratory that is not related, more or less, indirectly to the work on the farm.

Now, if I should stand at the head of an institution of learning wherein the whole scope of the work was simply out-door experiments, or wherein art was taught simply, the manipulations of the farm and the nicer processes of the garden, with science left out and the laboratory left out, I should resign in utter disgust. I could not run such an institution. Nor do I believe that those institutions can ever be successful, or that they can ever be practical in the widest sense of the term, unless they are founded upon genuine attainments in science. And then the practice, as it is called, or the art, which is better, comes in, and no man can be a genuine *artiste* in agriculture, or in the garden, or in pomology, or in anything else, unless his labors are founded upon large attainments in science.

Mr. Hilgard—There is one point made by Mr. Murtfeldt which I desire to notice, and it is this: He says that after all, the main object, or what is meant, is experiments and experiment stations. This would seem to imply that we really have made no genuine progress in agriculture, or rather that we have nothing to teach that would benefit the farmer. I do not think that Agricultural science deserves that imputation; nor do I think that experiments are at present our primary object. It is the popular prejudice that they are to be so. I do not think we ought to encourage this popular prejudice. I think that while experiments properly carried out, are of great importance, yet at the same time we must teach the principles, and, with the principles, sufficient practice—that is, sufficient practical instruction to teach the application of those principles. How the work ought to be done is the main object of these colleges. After all, our experiments can only lead to general results, and only by experiments continued for a number of years, and by a large number of colleges, can be secured the recognition of general laws. Now, if we announce that it is by this slow process alone that we can benefit the agricultural community, I think we lay a trap for ourselves. I think we should stand just on the ground that we have a great many things in practical agriculture, to teach which are exceedingly valuable—that it is more practice, more handicraft that we wish to teach, and that we have very valuable principles which we wish to inculcate, and that without experiments our colleges are not worth anything· We are to place ourselves then on that ground and let experiments be considered as a very important point.

Mr. Folwell—The main point is that this benefaction of the general government is for the benefit of the industrial classes. No matter about whether our institutions are scientific. The main point is the benefit of the industrial classes—for the liberal and practical education of the industrial classes.

I think I know something about what the wants of the industrial classes are, for I belong to that class. I labored on a farm for the first twenty years of my life, and I think I know just exactly what the wants of that class are. We farmers would not be content with an education inferior to that of other men. That led me to say here last night that the farmer wants an education to make a man of him, not merely to make a working man of him. It is therefore that I made the remark that Mr. Welch has so kindly alluded to, (for it was I who made the remark.) The gentleman misunderstood me. I had not the idea to which he refers, in my mind at the time. I ought to have said then that in the University of Minnesota, our plan is to make our agricultural college, a college or university which shall be a technical school of agriculture. We don't intend to build large houses in which we shall teach academic branches, because we are already teaching them in our institutions there. We organized as a university long before we got our agricultural college. We got our academic work organized, and we did not need to take up time in the agricultural school to teach the boys algebra, geometry, or even the elements of chemistry, and so on. That is a point in which we make a saving. We intend to bring this system up to the beginning of the Sophomore year, and not to the beginning of the Freshman year, as the newspapers have me down as saying yesterday.

Mr. Miles—I do not wish to travel over the ground I went over yesterday, but I cannot pass this subject without saying a word or two in regard to the differences between science and art. It seems to me that as soon as we confound these two terms, we throw aside all opportunity for improvement. The great drawback in agriculture has been, that we have been claiming for the last twenty-five years that it is practically based upon science. Now, if any gentleman will point out to me a single move or principle in agriculture that is founded on or is derived from scientific experience, I will own that I am mistaken. I do not know of one. Agriculture is an art. It is had with practice. Now the rules governing that practice are derived from experience. What scientific men have attempted to do, is to explain why these rules were successful. Attempts have been made heretofore to explain these rules. Scientific men have said the explanation is so and so, and hence they infer that we should modify our practice so and so. The practical men who are thus sneered at, found that this was not true. The scientific men have re-examined the case and found out that they were mistaken.

Now, I claim, that if we place science first, and practice afterwards, we cannot make progress. The art must always precede the science. You cannot build up your science until the art has made certain progress.

Why is it that the sister industrial arts are making progress then? Simply because in the investigation of them the various experiments could be tried. A calico printer wants to know how he can fix a certain color in the cloth. He goes to the chemist with a certain question; the chemist answers that question, and thus he has been directly benefited by the investigations of the chemist. But when the farmer comes to the chemist to ask a question, it is a vague, indefinite, uncertain question that he asks, and the scientific man cannot answer.

Now these two leading objects, or these two lines of inquiry, are of equal importance. I do not underrate or undervalue the importance of scientific instruction. There is no man who gives it a higher place than myself.

And I claim further, that an experimenter, in the practical department, cannot succeed unless he has a thorough scientific knowledge as a basis of his action.

In this matter of experiments we have been groping in the dark to a great extent. I apprehend that a large proportion of the experiments that have been inaugurated, have been attempted under mistaken notions—the idea that there is nothing known about farming at the present time, that the accumulated experience of the past has been of no use to the practical men of to day.

Now I am well satisfied that the principles of the practice of the art of agriculture are well settled, and they have been settled entirely from observation and experience. Look at the history of agriculture in colleges. You find that two hundred years ago certain rules of practice were arrived at by trial and observation; they were reached materia. These were printed, but they were not widely disseminated. Very few saw them. You come down a little later and you find men who had never seen the writing of their predecessors, who have by the same process arrived at the same conclusion. We find them to-day arriving at the same conclusion. We have presented at the present time as original (as they no doubt are with the persons who present them,) discoveries that they have originated of great practical importance, which have been discovered before repeatedly, time and again.

What is the object of experiments, then, if these principles of agriculture are well understood? It is simply to give us a little more practical knowledge. The farmer knows very well, and you cannot impress it any more strongly upon him by any scientific exposition of the matter, that the best mode of disposing of his corn is to feed it upon the farm, and return the manure upon the farm; that it is for his interest to feed his corn to his stock and get the return in money.

Now the question would come up in regard to the exact amount of money that he would make for a certain amount of corn. These experiments that we are inaugurating here, that we are attempting to carry on, are, or should be, made for the sole purpose of giving him a little more exact knowledge in the art. If these experiments are carried on with the understanding that you are going to revolutionize the art, they are carried on upon a strong basis. You cannot revolutionize his principles, for they are well fixed.

Now, these rules of practice have something to do with the art of agriculture, and a man can learn those principles—those principles can be taught. The making of these rules should be a question of ways and means. It is equally important that the man of science should interrogate nature, and ascertain the changes which are taking place in the economy of nature.

We would like to have him explain these processes—these rules of art. We know that the one man cannot accomplish very much in both directions. It is only by this division of labor that the whole work can be accomplished. The scientific man, in explaining the rules of practice, suggests a new line of inquiry, and then we have to go to experimenting to modify our rules of practice.

Now, it seems to me that this confusion of terms—using the term science to mean practice, and practice to mean science—mixing them all up—only retards our progress. Let the farmer perfect, by means of experiments, the rules of his art, so that he has some good *data*, and then he can put a more pertinent question to the scientific men for the purpose of getting an explanation of the why and wherefore he proceeds. It seems that this distinction is a broad one; it is a distinction that we must make, if we would have progress in the art we are seeking to cultivate.

Mr. Welch—I appreciate the truth of those remarks in general, sir; but agriculture is a very complex term. It covers a large period of operations; and while the gentleman's remarks are true in some of their branches, it seems to me that their truth may be questioned as to others.

For instance, as in stock-breeding. Now, all knowledge of stock-breeding, as studied by the student, is, or ought to be, founded upon progress in physiology and anatomy; and a knowledge of zoology is very important as a foundation for progress in stock-breeding. It is true, the art was in advance of science, and that the science has been established by the constant observation of different experimenters in stock-breeding; but when a fact is fairly set down and agreed upon by the various experimenters, it becomes a fact in science.

There is now, therefore, a science which has to be studied carefully by those who intend, or want, to be scholars in stock-breeding. Antecedent is necessary to practice in stock-breeding; and it seems to me that the progress in the subject has been largely due to the gentleman's well known progress in the science of zoology.

Now, there is another branch in farming. It is well known that the farmer has now many enemies to encounter. One of these is the innumerable hosts of destructive insects that help themselves to his products; and it is utterly impossible that he should intelligibly engage in the extermination of these enemies, unless he knows their habits; and the only way under Heaven by which he can know their habits, is by a full and perfect understanding of the science that gives those habits. And the gentleman has been engaged in the study of that science for a great many years. But I verily believe, after having inquired particularly into his whole practice, that he has given exceedingly valuable instruction before he gave any sort of practice in it. I venture that he will recommend to all of us to give instruction to our students in the principles of zoology, and in the principles of physiology even, before we proceed to instructing them in the science, or the art of stock-breeding, and stock-managing, and so on, and so on.

No doubt agriculture is an art that is largely based upon experiment, and that a progress in the sciences upon which it is based, actually has been made subsequent to a large progress in the art, and I am sure the gentleman won't assert that every operation on the farm is actually based upon the principles, whether known or not, which, if understood fairly, would belong to science. And I am sure he will say also that any scientific knowledge of these principles, whether we have that now or not, would be vastly important to the progress of the science.

Mr. Miles—I will go as far as any gentleman in my admiration of science, and its uses. A man is a better observer who is a thorough scientific man. But the idea that I am proceeding against is this: that our art is based upon science—that the rules of our art are based upon science; and that we call the art the science of agriculture. Now take the illustration of stock-breeding; it is a very good one. If I were going to teach a class stock-breeding, I would like to have them understand physiology and zoology, and all of those other natural sciences, because I could bring illustrations to fix the principles that I inculcated; and they would be illustrations that they would appreciate. That is all true. A knowledge of science in the student is desirable.

But the question arises: Have we made any progress in stock-breeding through scientific investigation? I say no; not one step. Go back to two or three hundred years and take those old writers, and you will find just as pertinent rules laid down for the breeding of stock as you will find in any modern writer. What the scientific man has done, or is attempting to do, is to explain these rules of breeding. Take the first work on Agriculture published in Germany, and you will find the rules for breeding, for the selection of the male, for the selection of the female, and the relations of the one to the other, and so on. Come down to later times, and take the writings of John Mill, and the writings of some of the old English farmers, and they get at this matter of experiment, as a matter of observation, that certain forms and colors were adapted to coupling with certain other forms or colors.

The scientific man has settled very many things; there are many points in which he has succeeded. It is true that in zoology and in physiology we have a great many illustrations which we cannot expect to understand when teaching the principles of stock-breeding.

Mr. Detmers—Since when has breeding made progress? Not before anatomy, physiology, and those sciences were cultivated as sciences. It is but a few hundred years—and I say very much when I say two hundred years—that which we may call breeding, has really made progress; that better breeds have been developed. I will not claim that those celebrated breeders in England, for instance, have been graduates of colleges. No, they have not; but they have been true observers of nature; they have listened to the workings of nature, and found out the rule by which nature governs, and they have applied those rules; they studied physiology from nature. It makes but little difference in the end, whether we study directly from nature, by our own observation, or whether it is taught us in colleges or schools. We have breeders in our own land—breeders who excel—who are not graduates of colleges, but are true observers of nature; others who have money enough, and who commence stock-breeding and think all that is necessary is experimenting; and as experimenters only will they succeed; but those men who follow certain rules—rules which have been gathered from observation of nature—are the only ones that can, and that will succeed.

Professor Daniels—A science is only classified knowledge; and when we speak of science, or speak of applying these rules of science, we are simply applying those rules by which a certain kind of knowledge—by which accumulated knowledge, or that kind of knowledge by which we accumulate enough, or a sufficient number of facts to state that a certain theory is true—and we call that a law—that is, scientific law. Now it is immaterial whether science comes first, or practice comes first. That is true, and I know it is true of Dr. Miles. He does not teach his zoology, he does not teach his stock-breeding, until he teaches physiology; when he teaches stock-breeding, and applies the laws of physiology to it. I know that he does not teach practical agriculture—that is the higher and better course—until the student has had botany and chemistry, and he applies those principles right along—he claims that they are practical agriculture, as he teaches them; but he applies those principles right along that the student has been learning for two years before. It is practical agriculture when he teaches it; that is when he shows them how those peculiar laws they have learned apply. If the students know it, it is science; and he nor any other man, who has had any experience in this matter, would attempt to teach agriculture arbitrarily; but he would teach those facts as far as he knew them, and show how far science explains them, and that is science, just so far it goes. Everything cannot be explained by those laws, and just so as we can explain them it is science. But I know that whatever Dr. Miles says, he teaches those facts as scientific facts.

Mr. Flagg—I don't know as it is worth while to differ much on this matter; it is merely to look at different sides of the same shield. But practically, there is certainly a good deal of force in what Dr. Miles said. We have a great deal of farming based upon experiments, which is good farming so far as our practical life goes; and yet, when you come to explain these processes, and give a theory for them, you will find the men will differ immensely in their theories, and perhaps none of those theories will be right. For instance, in the little matter we were talking about this morning: that is in regard to our wheat soils. Our experience in Southern Illinois and that of Dr. Miles in Michigan, and I presume it is getting to be very nearly the general rule, is that it is highly important to compact soils after plowing for wheat; and yet when you come to explain why that is to be done—what the advantage is that makes the wheat come better, and grow better, and remain through the winter better—you will find there is an immense difference of opinion. And that is only an illustration of a very large class of facts of husbandry that have not yet been explained or settled on any scientific principles, so that there is any general agreement upon them; and so long as that class of facts exist I suppose we must draw a kind of line between practical agriculture and scientific agriculture. I do not think that it necessitates any quarrel at all; it is simply because we know the facts, and cannot explain them.

INVITATIONS.

The President—I will interrupt for a moment to say that I hold in my hand a letter, which is a duplicate of what was sent me yesterday, but unfortunately I mislaid it. I interrupt the discussion a moment to communicate the letter, as it will need perhaps an earlier answer than it would receive if I did not read it now. It is a communication sent by the Secretary of the Riverside Improvement Company, addressed to George S. Bowen, and is as follows:

"Will you please extend to the gentlemen now visiting at Chicago, representing the agricultural interests of the several States, an invitation to visit Riverside at any time they may elect. Inclosed please find the time table of the Riverside trains. By leaving at three o'clock it will afford them sufficient time to take an extended drive around our improvements and return on the 5:50 train. I will perfect arrangements there for their convenience if you will give me a short notice of their acceptance."

I will repeat also, in connection with this, an invitation that was brought in personally by one of the officers of the Illinois Central Railroad Company, and this morning tendered to the Convention.

Mr. Flagg—I move that we suspend the discussion, in order to take up these invitations. I suppose the question ought to be settled this forenoon.

The motion was adopted.

Mr. Gilman—I move that the Convention accept the invitation to visit Riverside.

The motion was adopted.

The invitation from the Illinois Central Railroad Company was taken up.

Mr. Welch—I move that it be declined, with the thanks of the Convention, and an expression of the appreciation of the kindness of the company in extending it.

The motion was adopted.

PERMANENT ORGANIZATION.

Mr. Hilgard presented the report of the Committee on a Permanent Organization.

The report was read by the Secretary, as follows:

Your Committee on Permanent Organization, after a consideration of the general subject committed to them, respectfully submit that in their opinion such an organization would at the present time be premature.

(1.) They therefore recommend that this meeting adjourn, subject to the call of an Executive Committee to be composed of the officers.

(2.) That the same committee be charged with the duty of drafting each article of association, as may in their judgment seem best adapted to secure the objects in view.

(3.) That, in order that said Committee may the better appreciate the demands of the case, a time be given at this meeting for a general discussion upon the character of the Association to be formed—its constitution, its memberships, its objects, etc.

Mr. Flagg—I should like the report be amended so as to read that the Committee recommend that when we adjourn, we adjourn subject to the call of the officers; otherwise the adoption of the report might be construed to adjourn the meeting.

The amendment was made by the Secretary, there being no objection.

Mr. Flagg—I would state that the important matter in this report is the consideration of the kind of organization which ought to be effected; and I should hope that the hour which is to be devoted to the discussion will be taken now while we have the report before us.

The President—The report is before us, and may be made the subject of discussion. The discussion, however, should properly come upon a motion to adopt or to amend, or to do something with the report.

The report was made the special order for eleven o'clock.

The President—The hour has come for the consideration of the special order, which is the report of the Committee on Permanent Organization.

The report was received and adopted.

Mr. Folwell—I move that the discussion contemplated by the report take place now.

The motion was adopted.

Mr. Folwell—I do not wish it to be thought that I had any special proposition to bring forward here. I would remark, if you please, sir, that coming here quite unexpectedly, I did not know what I was to find here or whom I was to meet here exactly. And when it was proposed here, to form a permanent organization, the question immediately arose in my mind, of whom shall this Association be composed, what shall be its constitution, and what shall its object be? And as a member of the committee to which that matter was referred, I did not feel willing to begin to draw the articles of our association until I should know something about it from a discussion of a kind that may now take place—what has taken place and what is wanted. I will say very briefly, that for my own part, if there shall be a permanent organization, I would wish that it would be a practical one, and a broad one: that it should exclude nobody; that it should not be confined to agricultural nor mechanical matters exclusively, but to embrace all subjects which may properly be brought within the scope of institutions as founded by the land grant of Congress. I suppose we can do no business in the matter now. As we do not come here as delegates from our various institutions, we cannot do anything which will commit them.

Mr. Flagg—I suppose, in holding this meeting, we are exercising that inalienable right of American citizens of forming an organization for any purpose we choose. Of course we cannot commit anybody but ourselves. We are simply here as individuals. While what we may do here will not bind anybody, it still may have very considerable effect at home. It is not in our power to bind anybody except so far as we are concerned as individuals.

In regard to the calling of this meeting, with which I had something to do, I can only state my own views and leave others to do the same. This organization arose primarily from a consultation that Dr. Miles and myself were having at Lansing in reference to agricultural expementation. It is very clear to any one who has considered the subject at all that very great advantages could be derived by co-operation in experimentation—a subject which both of us had a good deal at heart. Having gone that far, the further consideration arose that this experimentation is to be done largely by the agricultural colleges, probably, and involve the agricultural colleges generally, and they again would involve pretty much all, or a large share of those institutions, founded on the national grant for the advancement of agricultural and mechanical arts, and they would include again a very large portion, perhaps nearly all of the institutions that are seeking the new education —I believe that is the term—so that there is quite a bond of unity running through all this, which would make it desirable in many respects not only to have those who are engaged in agricultural experimentation in the various agricultural colleges interested in this matter, but all interested in the institutions, perhaps, from the community of sentiment and community of interest and the possibility of our needing a defense. There are a good many reasons for forming a permanent organization which should be tolerably broad in its character. Primarily, the gentlemen who first called this meeting were seeking to carry out these agricultural experiments in common to get our whole country at work, if possible, in the matter of improving the scientific basis of our agriculture. That in itself is a great work and one which will involve a great deal of time, and might, perhaps, fully occupy any convention that we should be able to hold. At the same time, in view of the fact that there has, I believe, no convention whatever, ever been held of the Presidents of our Agricultural Colleges, and of those who are specially interested in their management, and inasmuch as they are new institutions, striking out a new path, in which co-operation, mutual advice and mutual experience will be eminently beneficial, it seems to me that there are pretty strong reasons for making this organization very general and broad in its character.

I merely throw out these general considerations now, Mr. President, with the hope that those who have considered the interests of the agricultural educators will speak further upon it.

Mr. Miles—It seems to me this question narrows itself down to the proposition whether it is desirable to continue an organization here which has been called for an especial purpose. The persons here in this Convention represent to a large extent the subordinate officers of the colleges which are engaged in this particular work. The primary object of their being called here, as stated by Mr. Flagg, was to get them to co operate. It seems to me that they have a right to organize for their mutual improvement and benefit for the promotion of the object they have in view. If the proposition is to have an organization uniting or bringing together the industrial institutions that have been organized under the Congressional grant, for the purpose of comparison of views in regard to the manner in which these institutions shall be conducted—the course sought to be pursued—then this Convention should have a very different object. The faculty of the colleges, and the persons in control of the colleges should be consulted and allowed to send delegates to the Convention, which is to form an organization upon that basis.

It seems to me that we can do nothing in regard to organizing a Convention of Agricultural Colleges any farther than this: that we might express our opinion in regard to the matter, and leave it for the faculties, and the parties in charge of the colleges, for the purpose of making the organization. If we choose to organize as individuals who are engaged in a common object, we can go right along and make a common organization.

The President—A year ago I had some conference with President White, of Cornell College, with reference to an organization, or at least to be called, looking to an organization of gentlemen connected with the industrial and technological schools—scientific schools of the country. And some discussion was held also in our own State. Mr. Flagg and myself held some conversation on the matter; and a good deal of interest was felt and manifested and consulted at the time. But it has occurred to them that there is already in existence a National Convention, very broad in its character and aims, looking to the discussion of all questions relating to education in all their departments and interests whatever; a Convention that has just closed its annual session at St. Louis, and which is willing to admit as many additional sections, I suppose, as are necessary to organize under it, to meet the special points and interests of any class of educators. That Convention, very many of the men connected with the institutions of learning, will want to attend, as several gentlemen present have come, perhaps, to this Convention. If an organization is made of the industrial institutions, for the discussion of all questions relating to industrial education, or the management of those institutions, I do not know why it could not be made there, and save us the trifling expenses and the time involved in making two or three annual trips; and thus the gentlemen who hold middle ground between the two associations, would feel that they would leave that and come and attend this. It seems to me that this form of organization is needed that is composed of all the men interested in agricultural education, where we can discuss when we meet, as we discuss here, all these questions. But, on the other hand, the specific object for which this Convention is called, is a proper object, and a sufficient object probably for an organization by itself. I know that the experimental stations in Europe have an annual meeting of all the experimenters and chemists—those interested, and the rest of the institution is not represented, nor are its interests represented. They meet in the annual Convention to report upon their experiments, and to discuss conditions of experimentation, and to arrange for experiments; and they meet for that purpose alone, and it is a matter which fully occupies their time and attention. The difficulty in an organization which should embrace all the interests that are represented in an industrial institution, would be this: that we would be as we are now—crowded for time. Some of us are interested in all the questions concerning these institutions, and they press upon us; they are practical questions—they are meeting us in the face as soon as we get at home. We have got to battle our way through with them some way or other, and with that light or information, and with that comparison of views and relation of experience; and we cannot have these unless sufficient time could be given.

Now, it remains with the Convention, it seems to me, to determine whether the organization that is proposed to be made, should be an organization like that of the European, for discussion for experiments, reporting experiments, and arranging experiments; or whether it shall be a Convention of educators in these schools who will meet to discuss the general management of schools, experiments included. I think it will strike you at once as a practical difficulty with the experiments themselves constituting so leading an interest, whether that object itself would not call us together, and when we get together we could not discuss the other questions.

Mr. Flagg—I wish to ask for information, in order to bring out another fact, to what extent our educators from the agricultural colleges find that the questions they desire to consider, are considered in the National Convention of Education.

The Chairman—My impression is, that they have but little place there; that the discussions do not come upon our ground except incidentally; and that our topics at present have no very warm welcome in that Convention; and that there is a radical divergence of views between us and the leading men who are leading this National Educational Convention. And so as between the two, not feeling able to go to both, I came to this, as I shall probably do in every case.

Mr. Welch—I harmonize with the views expressed generally, with regard to the object that such a Convention as this could react if it should become permanent. I do not fall into the idea of making this Association that is to be, a branch of a National Association of Education. The questions that we want to discuss, it seems to me, are peculiar, and arise from the newness of the enterprise. These immensely important subjects that are discussed by the convention of teachers—the National Convention—have been before them for years and years. Most of us have reached our conclusions with regard to them. But with these new institutions we are facing some new problems that are intensely interesting, and that are portentious in their importance. Hence we might be trammeled by any connection of the National Association. At any rate, our attention would be more or less distracted by the multiplicity of subjects that are discussed by that body.

And then again, it might not be convenient for us to meet at the same place that they meet. And for my own part, I have not time for attending more than one or two conventions in a year. These are reasons, however, which may not appeal to most of you.

What I want to know is not whether languages are more efficient in giving general mental discipline than science; not how to conduct primary education, or to get at the exact value of object lessons, or how to teach geography; but I want particularly to know how to manage in the solution of the new problems that we have to face the moment we organize an industrial institution, as to the admission of the sexes; as to the labor question; as to the exact relation to the sciences and their practice in the field, and as to the new problems that, in the organization of these new institutions, come before us in regard to college government. Such things I come to get light on. The old subjects that have been discussed, from time immemorial, and which you and I have hammered away at for twenty-five years, I have laid aside.

Now, there is another point that suggested itself to me this moment. For my part, I am sure that if we, who are present here from our institutions, give our assent to this Convention, it will be heartily acquiesced in by those we left at home. And though we were not actually elected as delegates to this Convention, yet we are considered as representing these institutions, and institutions will be bound by our actions; and I am confident that will be the case with all the faculties of the new industrial colleges that are not present in the Convention. And I believe, sir, that this meeting can reach, or leave matters in such a shape that we shall become a permanent organization, with definite objects; one of which shall be experimentation; and another, the course of study best adapted to accomplish our purposes in the new organization, and the manual labor, etc., etc. I don't want any one question, or any one specific individual purpose, however important, to absorb the energies of the association; but I want it to gather within its compass all the important topics that must occupy the attention of men who have these institutions in their charge.

Mr. Denison—The remarks made by President Welch, in reference to representing the Institution of Iowa—the fact that the faculty of that Institution, and probably that that Board of Regents, will approve what is here done—will also apply to the Institutions that we represent. The Secretary of our Board is present, and I presume that any determination of this Assembly, in reference to any permanent organization, will be approved by them.

I wish, however, to say that while the objects which we aim at are distinct and separate from the objects at which the National Teachers' Association aim, it is true that we hold a relation to that Association. We are American citizens. I believe that it is true that an officer of the government to which we stand related, is recognized as one of the important officers in that Institution. I refer to Mr. Eaton, the Commissioner of the Bureau of Education, and who, by direction of the government, has special oversight of the endowment granted to us, and of what we are doing in relation to that endowment.

I do not know but it may be best for us at first to be distinct from them until we require an organization that shall be an individuality; until we to some extent initiate a progress more or less in the working out of the special problems, committed to our trust. But I believe the day may come, and perhaps will, when this organization will be considered a section of the National Teachers' Association; that association allowing us the utmost freedom in the expression of our opinions, and in the working out of the special problems committed to our care.

Mr. Murtfeldt—The call issued for this Convention is sufficiently broad to admit a person of my standing, to this Convention, I believe. I hope that when an organization of this kind is completed that the lines will be very clearly defined. Now we have a particular Institution in the State of Missouri that is a little different from most of the States by which it is surrounded; and a very few minutes will suffice to explain just how that is. Our industrial university, or the University of the State of Missouri, has twenty-two curators; and the State Board of Agriculture is composed of twelve persons that are self-perpetuating — elected by the presidents of the agricultural societies throughout the State. The Governor and the State Superintendent of Public Schools, are ex-officio members of the State Board of Agriculture; and, by the organic law of the State, fixing the location of the Industrial University of Missouri at Columbia, there are seven of the State Board of Agriculture incorporated in the State Board of Curators of that Institution. You will therefore see that these curators have, in the managing of the Institution, something more than the mere care of the fund. You can readily see the intimate connection that there is between the State Board of Agriculture, as such, and the Board of Curators, and the Institution itself.

As I stated before, I think that the call was broad enough to admit me to a seat upon this floor, at this time, and I want this Convention to clearly define the line as to who shall be entitled to a seat upon this floor, and who shall not. If you say that no one but the professors or members of the faculties of the several universities, in the United States, shall be entitled to seats, all right. If you are going to make it broad enough to admit the Presidents or the Secretaries of the several Agricultural Societies, or the State Board of Agriculture to seats, it is all right also. Only do this for me: clearly define what you want.

Mr. Parker—I think the questions coming before the Association that is contemplated, are peculiar, and in some degree differing from those that are discussed at the National Association; and it appears to me that it is very essential that we have such an association.

The Regents of the Industrial College, (or the curators, as they are called in Missouri) in Kansas, meet frequently, and have long and patient discussions, sitting some times all night; going into session at half-past six in the evening, and not adjourning until half-past six in the morning. You can judge, by that, something of the interest that is taken. The questions are new, and of the greatest importance, just how to launch forth these new institutions. We have to lay the track before we can run the engine; every mile of the track must be laid first. The old institutions—the former organizations of colleges—know what they are going to do and what they are aiming at; but we have to combine labor in the new sense with the new education, and the form of education is to be determined.

Now, as a Regent, as one feeling this responsibility resting upon me, to know how to advance our own institution, it is a great privilege to come into an association of those similarly situated, and who have had larger experience, and who can give information upon those points that we need information upon, and I feel as though it would be just the thing in years to come, if we can come together and compare our work, and see what progress we have made; and so go on together with the experience of each, and all inuring to the benefit of all, so that we shall be able to judge from a larger induction.

Mr. Folwell—I sympathize very much with those gentlemen who favor the union with the National Educational Convention; as I favor it for the same reason, as a matter of economy to myself, I shall probably attend the meetings of that association, and should want, also, to come here; and would not like to take my choice. There is some hostility between the persons who compose that association, and those of us who are likely to meet here; but I think that is not necessary any more than there is a necessary hostility between the scientific and classical system which we have discussed. We have brought the matter down until it is merely a question of methods and means. We are substantially agreed; and I do not believe that we should lose in uniting with the National Educational Convention, or that we should find ourselves out of place there, or out of sympathy with the men we should meet there. We can go on with these very troublesome questions, and I cheerfully agree with the last gentleman that they are some of them troublesome questions. There are, perhaps, some in that convention who are jealous and doubtful of this new experiment that we are making. I would like to discuss these matters right in the presence of the backers of the old education.

I would add one further word about the organization to be formed here. I must confess that I did not so carefully read the call as I ought to have done; otherwise my own action in the case, as a member of that committee, might have been somewhat different.

I will say, also, that I favor a broader organization; one which will include experimentation and a great many other things; still, at the same time, I would not throw anything in the way of gentlemen who may wish to form an organization simply for that one purpose. At the same time, my advice to them and to all would be, that we should make the organization much broader than that.

The President—I suggested joining the National Association, not because I felt myself attracted that way, but I was aware that several of our institutions are affiliating more nearly with institutions represented there than the rest of us. Some of us are seedlings, and some of us were grafted on to old institutions. The Wisconsin school was grafted on to the university; the same is true of Minnesota, and perhaps in one or two other States; and the Sheffield Scientific School is intimately related as a branch of Yale College, and the new school of Harvard will be united with the Harvard College. As to the School of Technology, it is singularly associated, I think. I don't know how that is; but the Scientific School there, at any rate, is a branch. And I suppose that I threw out the suggestion simply because it might aid myself and the other officers of the association to act in the matter of permanent organization, to have the point drawn out in discussion. It is possible it might be well for the Convention to go on a missionary up to the o[illegible] National Association.

Mr. Folwell—There seems to be an understanding that there is a concession on our part, that we have interests that are adverse to other educators. We have no such interests.

The President—I do not understand it that way, nor do I think the others understand it so.

Mr. McAffee—It seems to me there is a very great call for an organization in the direction of the call that we have heard read here, and that we all have seen before. There is certainly a special call for an organization in the direction of unity of experiment among the institutions. There are, no doubt, great interests involved in respect to the institutions, aside from that; but here is the special matter—the matter of experimentation. We are seeking for knowledge by experiment; we are trying to make agriculture, which is accumulative science now, accumulation of distinct facts. To organize these facts, which we can do faster and better by these experiments, it seems to me eminently proper, and eminently fit that we should organize those who are connected in any way, remote or direct, with those experiments—organize them in such a way that there may be a community of the work. I think it is possible; and I think we can come together on that subject, and after that question has been decided, we can organize an association for experiment there. Then, if it should become necessary to go further and organize for the purpose of meeting to discuss questions of the land grant, school management, etc., it might be well to include that in the organization. There is this one point that seems to have peculiar force and a peculiar meaning to my mind, perhaps because I am intimately connected with experiments—that there should be an organization in the direction of a community of experiments.

Mr. Flagg—I assent very heartily to the remarks of the gentleman who has just sat down. I think as he does, that while the primary object of this organization should be the accumulation of agricultural knowledge particularly, that it ought to be the feeling of us who are engaged more particularly in that work, and that we very earnestly desire to have the co-operation and aid and suggestions of men who are generally interested workers, as the Presidents of our colleges, founded on the national grant, all are.

In making this call, and sending it out, for instance, we found a great many cases of this kind where a university—as is the case I believe with the one in Minnesota—had not yet been sufficiently developed to have any representative of the peculiar agricultural interest in it. There are a good many cases of that kind. Now, where no such organization exists with these colleges, we still want their co-operation and aid; and if we can furnish them any advice ourselves, and give them any suggestions to suit their peculiar wants, it is eminently proper that we should do so; and if they can give us any suggestions in regard to their experience, it is eminently proper that we should have them.

It seems to me that practically we ought to make an organization which should be broad enough to interest all who are engaged in the general work. I think the Secretaries of our State Agricultural Societies, for instance, are men that we particularly wish to get in. They are certainly as much interested as any one here can be in the dissemination of agricultural knowledge. That is true of our Presidents of these various Institutions founded on the national grant. It is true of our technological Professors, I presume, quite generally; and I should favor, myself, certainly, a tolerably broad organization of all interested. There are not so many of them, as yet, that they would stand in one another's way. The time may come when it will be necessary to go either into separate sections in the same convention, or else to form a separate convention of experimenters. That time has certainly not yet arrived, and in order to bring this matter up, I would ask leave to introduce the following resolution:

Resolved, That the object of the organization to be formed by this meeting shall be the advancement of the interests of industrial education, by assembling together persons engaged in agricultural and mechanical experiments and education, and with a view of disseminating industrial knowledge.

I do not know whether that will cover the views of others at this meeting or not.

Mr. Miles—I think, myself, it would be desirable to have an organization of the officers of the different industrial institutions, for the purpose of discussing methods of instruction, the labor question, the endowment question, and all of these other questions. That I give as my own opinion. I have no right to represent the Michigan Agricultural College on that subject, but I come here as a private individual, and do not know what the wishes of the college would be as regards this organization. I have no doubt, however, that they would co-operate with the other institutions, and be glad to in this general organization.

I would be very glad, however, to have a separate organization for the purpose of promoting experimentation, for this reason: that it seems to me that if connected with any other interest, the time will be so occupied by delegates at the convention, that we cannot get the full benefit of consultation in regard to the matter of experimentation.

Now this matter of conducting experiments for the promotion of the science of agriculture is valuable, and we can only make progress in it by discussion of the subject in detail.

It seems to me that we can decide upon a certain number of experiments that we can try in common; then we can come here a year from now, with the results of those experiments, to compare notes, and endeavor by discussion to get at the cause of those results. We shall then be much better fitted for the trial of experiments in the future.

It seems to me that this organization, for the promotion of experiments, for the purpose of improvement in the art and science of agriculture, would not stand in the way of this other organization, which is quite desirable—perhaps, equally desirable.

Mr. Parker—It seems to me, that while that question of experimentation is of great importance, and it would be an excellent plan for the Superintendents of the farm and the Professors of agriculture to meet and compare notes; it is of equal, and perhaps greater importance that the officers of the colleges, who have in charge this general department, and have the appointment of these Professors of Agriculture, and Farm Superintendents, and who need to know if they are working upon the right plans—that those who represent the people in the control of these institutions should have their place of organization and of consultation, because they need to have a general view of the whole subject. It appears to me that it would be extremely beneficial if they could all come together, in one convention, where they could compare the work that they have done. I feel that we need just such an organization.

Professor Detmers—I think it is highly necessary that those who are considered practical men, should come to this meeting and find that they are, after all, to some extent, scientific men themselves: and which is very important, particularly, that we should avail ourselves of the opportunity afforded by these meetings, to disseminate, if we can, among as large an audience as possible, correct views as to the cultural education. In the management of our colleges we have to combat a prejudice; and the most we can desire, is to have a very large audience at those meetings. We want not only States, but counties, represented.

Mr. Miles—It seems to me almost impossible for any one to discuss this subject of experimentation, unless they are actually engaged in it; they cannot see the force of the arguments; they do not understand them. It seems to me it would be better to limit it to those who are engaged in experimenting.

Mr. Denison—Would not the objection be met by making the experimenters a section? They can be sections of the meeting, and discuss the matter to the fullest possible extent.

Mr. Miles—There is the difficulty. This would be included in a larger organization, and be subject, to a certain extent, to that wider organization. The difficulty that the gentlemen are trying to obviate, can be got over with in this way: Make the larger organization an independent one; and then arrange to have the meetings at the same time and place. I think the work of the Experimental Convention could be carried on more successfully and more satisfactorily, if it was placed entirely in their control.

Mr. Hamilton—I do not know whether I understand the intention of Dr. Miles in regard to this matter; whether he includes in experimenters, all persons who are interested in experiments, directly and indirectly; that is, the Professors of Agriculture, who are carrying on these experiments, and the Presidents of colleges who control them. Now, it seems to me very necessary that if the Professors of Agriculture meet together, and wish to do any effective work, in which they can engage their own colleges, they will have to have some other representative from the colleges, who have general control of the interests of their colleges. They will have to be in every convention at which these experimenters meet. The experimenters are not acting independently of these colleges; they are a part of these colleges—but a department; and the funds that they get for the purpose of carrying on their experiments, and all the assistance they receive, they receive from these colleges; and the Presidents of these colleges should be consulted in regard to any enterprise which they enter upon. It seems to me that our convention could be broad enough, at least, to include the Presidents of our colleges, or some representative from the Board of Trustees—let the President be the representative, if you will; the Secretary of our State Agricultural Society, the Commissioner of Agriculture, and other persons who are interested in this thing. And by interest, I mean those who are actual experimenters—carrying them on with a view to develop some theory—and who are willing to co-operate in this system of experiments which we intend to carry out.

Professor Hilgard—I think the difficulty raised by Dr. Miles, as to our organization becoming too numerous, can be settled upon a practical basis. The American Association for the Advancement of Science—I beg pardon for referring to it—but I think it has a good plan for obviating such a difficulty; which is by dividing the different subjects into sections and sub-sections; we have had sub-sections whenever it became necessary. Sections A and B are generally found to be quite sufficient, however, for the transaction of business, and I am sure that a good many of us who have had discussions in those sections, instead of complaining of having too large an audience, have been troubled with the opposite difficulty, that is, too small an audience. The detailing of experiments is a matter in which people will not be very generally interested. The result of the experiments is what they want and not the details. And I think that the section of the Association by which a discussion of this subject is particularly committed, would not be likely to be burdened with too large an audience.

Mr. Miles—It seems to me that if we should carry out the suggestion that has been offered here that we should get the Presidents and officers of our colleges into the business, that they would be glad to throw the load off from their shoulders. Now if it is supposed that these officers are to follow each squad of men around to see what they are doing, and where they go to, suppose you have your geologists—are they to go around and tend to all this work, for the purpose of promoting the study of geology—for mutual improvement? Must you call in the Presidents of the colleges, to stand over there and see what they are doing all the while? There you have other Professors and the Engineer; are they too to join in this work for the purpose of mutual improvement? It seems to me that the Presidents of these colleges and these other officers would be glad to be relieved of it.

If this experimental organization is made a section of the other organization, we shall then need sub-sections, and we will have a very complex arrangement. It would necessitate sub-sections for chemistry, mechanics, and experiments in physics, and that soon. It seems to me the wider you make the organization, the more complicated it is going to be.

Mr. McAffee—I have frequently seen where an object that has been held in view has been defeated by widening that object out and extending it in too many channels. We used to think that an agritural society embraced all husbandry. How is it? We have found that it is necessary that there should be sub-divisions in husbandry and that different interests should be cared for by different independent associations. You find that your breeders find an association with profit to themselves and with profit to the country. You find that horticulturists have organized an association, independent of agriculture, which is doing a great and good work, and people in general will look carefully at this system of experimentation for the purpose of elementary knowledge, science with agriculture, and will find that it is so vast, and so grand, that they will unite with it and make it a broad and a great organization. It is necessary that the subject should)e carefully considered in the convention. It is necessary to take all he time and all the attention that the members of such a convention an devote to it. It is a larger subject, perhaps, than many consider it o be, until they have actually got into it and found what it is enlarging to. And I would therefore insist that there is enough to do for an rganization which has this specifically for its object; there is enough o do in the way of organization and experimentation, in these different institutions organized under the land grant, to carry on the organization and make it very interesting and very profitable in a very cientific point of view.

There is another question that I wish to call your attention to. The nanner in which this convention has been called, and the words of he call, have not been the means of bringing together representatives f the governing powers—the trustee power which governs these land rant institutions. It has brought together the representatives of the residents of the colleges, representatives from the chairs of agriculture, and it has brought some others—some experimental farmers, etc. ow it seems to me eminently unfit and improper that this conven-on should take the responsibility of organizing a body such as has een spoken of here, which would have under consideration all things nnected with this new education. Such a body is needed; such a dy is eminently proper and eminently necessary in the United States. uch an organization has never been formed and it is a wonder to e that it has not been formed; but that this Convention could take eps to form it, it seems to me hardly possible under the call. We n take steps here which are eminently proper to form an organization ch as I have spoken of, for the purpose of organizing experiments.

Mr. Welch—I perceive that we have departed largely from the spirit this call, in the discussion of the various interests outside of experiental work. I would ask our friends who would advocate the organization of a society for experimenting, whether that is not ungermane to the purpose to which we have met; and whether we have not wandered from their intentions in getting up the Convention.

Mr. Miles—I would make a very brief expression in regard to the origin of this Convention. In the conversation that occurred between myself and Mr. Flagg at Lansing, we talked of the necessity of getting together those interested in this matter. Several of the colleges were mentioned; and I said that the Presidents should be written to, where we did not know any one interested in experiments. We did not wish to limit the matter very closely at the present meeting.

I have been very glad that the discussions have taken this wide range. I am glad we have not cut down to the strict limits of the call; but for organization it seems to me desirable to limit it somewhat.

Mr. Welch—I certainly am in hearty sympathy with the object that Professor Miles advocates, and I appreciate the immense importance of a series of experiments conducted by the various colleges in common. But I confess that I did not come here expecting that an association would be formed. I am not selfish about it; but if it would reckon the Presidents all out, as certainly this proposed association would, because it has been expressed definitely. If I am wrong, Professor Miles can correct me.

Mr. Miles—I did not assume to reckon the Presidents out, or anybody out, but simply to bring in those who are engaged in experimenting, so that all would engage in it in common. We do not want to rule out any class of men. We would like to have the Presidents here every time.

Mr. Welch—I must agree with some gentleman who has inquired whether the proposed object could not be well reached by sections. I do not think that the parent society, which should have such a section, would trammel it in the least; because it would have no other control over it than to fix the time and place of its meeting. Then the experimenters in that section would have the whole weight of influence and the whole sympathy of their co-workers in the colleges; whereas they would lack, it seems to me, that influence and sympathy, and would lack the help that comes from general attendance.

One of the Professors has said that only those who are actually engaged in experimentations, can take part in the exercises of a meeting of experimenters. I cannot think that that is exactly and strictly true; but I know there is a good deal of truth in it; because, though I do not myself take part in actual experimentation, I keep myself posted on the experiments that are going on to a large extent upon our [illegible] farm. Now I am willing, so far as I am concerned, that this subject of experimentation should be the prominent subject to be considered in these meetings; but there are a great many exceedingly intricate and troublesome questions, in this new organization, to permit one single one, though it is of paramount importance even, to engage all the attention of the Association.

One thing about what the gentleman says as to the representation of Trustees here. The Presidents of these Agricultural Colleges, so far as they are here, are Presidents of the Boards of Trustees, I think. If that is not entirely true, it is true in most cases.

Mr. Hamilton—He is not of our Board.

Mr. Welch—He is not?

Mr. Hamilton—No sir.

Mr. Welch—The Presidents generally represent the Trustees; and if they are not on the Board of Trustees, as of our Board, they are the preceding officers.

Mr. Murtfeldt—It is not so in Missouri.

Mr. Welch—It is not so there?

Mr. Murtfeldt—No sir.

Mr. Welch—I simply spoke of cases like my own, from which I came as an individual.

Mr. Flagg—I would like to say one or two words more in reference o this resolution. I have offered it in order to arrive at some basis of greement. I shall be entirely willing, myself, to take up either theory; he one that Dr. Miles is in favor of, or the other one.

I think there is a good deal of force in what Dr. Miles says in reerence to the benefits which would be gained from concentration on ne point. At the same time, recognizing the fact that we are but few s yet, we speak of ourselves now as interested in Agricultural Coleges and agricultural experimenters—men who are in the general inerests of agriculture. We are so few as yet that I do not see any great isadvantage that will arise from our all coming together and consultng. I do not know what the experience of other men may have been, ut my observation is that when we get the most we can together who re interested on all points—I do not care how broad you make it in eference to agiculture—that we still lack very much of intelligent ppreciation, understanding and knowledge of the conditions we are boring under. I do not see any present danger of our being overome with a redundance of wisdom. And I think the more we can et in of these men, the better off we will be.

Mr. Roberts—The matter of experiments President Welch and I have been engaged in a good deal this summer; and I conceive that there is two much stress laid upon experiments as a group, or as bringing the result of the different experiments together for comparison. For instance, I find it very difficult in experimenting on our farm. Let me go back a little. Having lived in Henry county, I found that the climate was wonderfully different. It is so in our own State with experiments, frequently. The experiments of crops that we tried would not produce the same results as in my own county at home. And now I conceive that on our farm there, the soil is so very much different from the soil of Illinois there, where the college is situated—I mean taking the two farms, not the two different States in general—the soil of them is so different, and that soil is so very much different from the soil of Maine—the climate, and all things considered, will have such a different effect—that you do not learn much, you do not gain much.

Now the experiments that are made on our farm there, will not apply to the whole State; much less to Illinois and Maine. And so, to a very great extent, each college has got to be an experimental college for its own State, or as much of it as possible.

Now I find one great difficulty. I take a field and lay it off in plats for wheat, of two acres each. I find great difficulty in getting those different plats to operate alike, so that the results will amount to anything. One part of the field will do much better than the other part.

There are certain things that can be learned, but it is my opinion that those experiments cannot be relied upon to give us a very wide range of certain knowledge.

Besides this, there are a great many other things that may exercise an influence to make the crops different. There is the amount of the rainfall, the backwardness or forwardness of the spring, the temperature, etc. A storm this year spoiled our oatfield, and knocked our experiments almost all to pieces; blew the oats all over. So we have all these things to contend with. And it seems to me that it would be doing a wonderful work, if we could succeed in applying our experiments to our own States. Our agricultural papers, it seems to me, are the best, and perhaps the only means by which we can reach the end we want to reach. Professor Miles and I can be in weekly communication as to any experiments we are carrying on.

Mr. Miles—The object of this resolution was to call out discussion and get an expression of opinion. I now move to lay the resolution upon the table. The effect of this will be to leave the matter for a committee of the officers of the society to consult and plan.

I must say, that, although I expressed my own opinion very positively and decidedly, yet I have no very strong preference either way in regard to this matter. I expressed my opinion strongly for the purpose of bringing out discussion. I have no strong preference either way. Therefore, I move to lay this resolution upon the table. That will leave the officers of the society free to consult one another, and act as for the best interests of the whole.

The motion was adopted.

Mr. McAffee—In what position does that leave the matter for consideration?

The President—It leaves it where the report left it—in the hands of the officers, who are made an Executive Committee, for the purpose of making an organization.

Mr. Flagg, as Chairman of the Committee on Experiments, submitted a report.

Mr. Flagg—I would state, in explanation of this report, which I now make, that we could get but a portion of our committee together; but we got as many together as we could, and with what unanimity we could. In case there should be any fault found with what is reported, I hope that members of the Convention will feel entirely free to differ from us. The report is as follows:

REPORT OF COMMITTEE ON EXPERIMENTS.

The Committee have taken the subject assigned them under consideration, so far as possile in the press of other business, and would report as follows:

The field of experiment in its widest sense, in relation to our colleges founded on the national grant, is large and crowded with work. We want—

I. Meteorological observations.
    1. Scientific, after the Smithsonian plan.
    2. Practical, like those of the Signal Sense.
II. Mechanical experiments.
    1. In strength of materialts.
    2. In native powers.
    3. In trials of agricultural and other industrial implements.
III. Experiments in physics, especially in the effects of different degrees of light, heat and electricity and moisture on vegetable life.
IV. Experiments in industrial chemistry, such as analysis of soils, of clays and other earths used in the arts; of coal, lime, and building rocks, minerals, manures, plants and their products, and of animal products.
V. Experiments and observations in mining and metallurgy.
VI. Experiments with soils in their drainage, pulverization by different implements and their compaction; the application of different fertilizers; the variation of soils in adjoining plots, then continuous cropping without manure and other irrigation.

VII. Experiments in special culture with different varieties of grasses, grains, roots, plants, trees, etc., with variations in the time, distance and depth of planting, modes of cultivation, harvesting, manuring, modes of propagation; and with insects and diseases affecting plants.

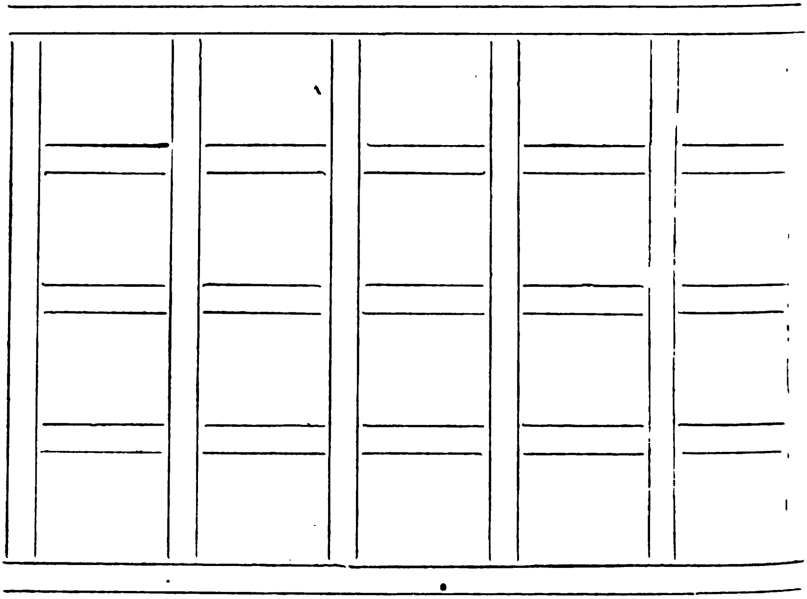
VIII. Experiments in the breeding and fattening of domestic animals, comparing difference, breeds and species, then diseases, etc.

We enumerate these to give those who have not given the subject special attention, some idea of the immensity of the labor to be performed. To a large extent, of course, these experiments must be tried by each State, for its own people, according to its peculiar wants and capabilities. To a considerable extent, however, experiments may be tried in common or repeated all over the country. Especially this is true of the culture of certain widely grown plants, such as corn, wheat and other cereals.

Accordingly, we submit herewith two or three simple experiments of primary importance and inexpensive character, which we hope to have begun next year at a large number of our agricultural colleges, and prosecuted to final results.

EXPERIMENT No. 1.—1 ACRE PLATS, 2 RODS BY 4—4 FEET BETWEEN PLATS.

Experiment to Test the Variation of Soil on Adjacent Plats.



The plats should be situated on a soil as uniform throughout as possible, and which has not been manured, at least for a number of years. If possible, the soil should be tile-drained thoroughly. The aspect of the whole should be the same, and the slope uniform if possible. In case of lack of tile-drainage, the soil should be naturally well drained; and where there is lack of uniformity in the slope, the differences between different plats should be carefully noted. A separate analysis is desirable of the soils on each plat.

The plats should be plowed and otherwise cultivated uniformly at the same depths, at the same time and under the same conditions.

These plats should be planted to corn in 1872, in drills, at such distance between rows as each experimenter may prefer, one stalk in a place. The same number of plants should be grown upon each plat.

No manure should be applied in 1872, and the experiment should be repeated in 1873 and 1874, also without the addition of manures.

The corn should be cut up at a proper stage of ripeness, weighed green, each plat separately, and cured in small stooks, and when thoroughly dried, should be weighed again, stalks and all. The ears should then be husked and weighed separately first, when first husked, and again when the cobs seem thoroughly dried. The pounds each of soft and hard corn should be noted.

The time occupied in planting, in going through each process of cultivation, harvesting, etc., should be accurately noted and performed, each in the dry part of the same day.

This experiment is intended to ascertain the relative differences in the natural productiveness of adjacent plats, with the view of thereafter applying manures to the soils thus proved.

EXPERIMENT No. 2.—Planting of Corn in Hills and Drills.

The fields planted in hills and drills should consist of a little more than one acre each, divided as in the preceding experiment, into twenty plats, each four by two rods. Each of these fields should be as nearly as possible identical in soil, aspect and slope. In one field the corn should be planted in hills, in the other in drills, at the same distance apart between rows, with the stalks placed equi-distant in the rows, so that the number of plants to the square rod shall be the same in each case. The different fields should receive the same amount of cultivation, and the crops should be cut up and weighed, the ears weighed separately, and the amount of soft and hard corn compared in either case, as in Experiment No. 1.

EXPERIMENT No. 3.—Uniform Application of Manures on Adjacent Plats.

The object of this experiment is to test the variation of soils on adjoining plats, both manured and unmanured, the conditions being more complex than in the first experiment.

Great care should be taken to obtain as uniform conditions of soil and of the manures applied to it as possible.

The plats should be planted with corn, and cultivated and harvested as prescribed in experiment No. 1.

We recommend, as in the previous cases, the choice of uniform fields under uniform conditions, divided into plats separated by strips of four feet. The same weight of the same manure should be applied on adjoining diagonal plats, leaving the alternate plats without manure for purposes of comparison—thus:

Manure.		Manure.	
	Manure.		Manure.
Manure.		Manure.	
	Manure.		Manure.
Manure.		Manure.	

Mr. McAffee—I do not understand one point there, Mr. Committeeman, that says the corn shall be planted at such distances in the drill as decided best by each party.

Mr. Flagg—Such distances between rows and in drills both—as the particular experimenters might desire.

Mr. McAffee—Then there is another point. Is it provided that all experimenters that are trying that experiment, shall use the same variety of corn or such as they choose? I would remark, if that is the case, that there are some varieties of corn which may vary in small plats, and do not stand so uniform in the field as other varieties, and I should wish to have one certain variety, or some certain variety fixed upon, that are more constant in their characteristics than some are.

Mr. Flagg—I will ask leave to explain here. As the gentleman will perceive, the point is this: to get at a field which shall either be uniform in its natural productiveness, or if it be not uniform, to notice the differences, plat by plat, so that we can apply the manure to it after we have got through with our first series of experiments, and see pretty definitely what the effect of that manure will be. If you should have one plat, or one-twentieth of an acre, which would produce one bushel of corn more per year than the one adjoining it, and were to put on your manure before you had ascertained that fact, your experiment as to the manures, or comparison of manures, would be entirely vitiated, or partially so. The object, therefore, is to plant, year after year, as far as may be thought best, these different plats without manure, and ascertain their relative productiveness. If they prove equal in productiveness, all well and good, or if they do not prove equal in productiveness, we want to know it, and to what extent they are unequal. Having ascertained that fact, your committee then suppose we are ready to go on and apply manure, and by the results to decide to what extent it has been affected by those manures.

The President—In these preliminary experiments, you do not design any comparison between the plats of one institution and those of another.

Mr. Flagg—We thought not. I would call the attention of the gentleman from Wisconsin to this fact, that while it may be desirable on many accounts to use certain particular varieties of corn over the whole extent of country over which we hope to range, yet it would be practically impossible, because the corn growing in different latitudes varies so much in its characteristics and its wants.

The comparison that we wish to make is simply to ascertain the fact in the first place, whether this variation of soils adjoining one another is found throughout the country that we have under experiment, and whether they all vary in this way.

Mr. Miles—It makes no difference in regard to the distance apart, provided it is uniform. It matters not about the variety of corn. What might be a certain variety in one State might be different in another State. Let each one select the kind that will grow best. We can ascertain then whether the soils in one locality are more local to those varieties than those in other localities.

Mr. Welch—I move we now adjourn to half-past one o'clock.

The motion was adopted, and the Convention adjourned.

AFTERNOON SESSION.

The Convention was called to order at two o'clock P. M., by Vice-President Miles.

The President *pro tem*—The question before the Convention is the adoption of the report of the Committee on Experiments.

Mr. Flagg—The report, I will explain, is given, but not in sufficient detail as far as the last two experiments are concerned.

The Committee recommended as experiment number two, the planting of corn in hills and drills; and specifying details, which they will add to hereafter.

Experiment number three is in relation to the uniform application of manures on adjacent plats; which needs to be set forth in detail also before it is finally acted upon. Otherwise, the report of the committee is complete.

I would add, that should this report be adopted, I should then move the appointment of a sub-committee to perfect details, and to correspond, and as far as the colleges will co-operate, to carry it out—to endeavor to have these experiments tried in as many institutions as possible during the coming year.

Mr. Daniels—I move the adoption of the report.

The President, *pro tem*—That is the question that is before the Convention.

The report was adopted.

Mr. Flagg—In order to close up this business, I will move the appointment of a sub-committee, whose duty it shall be to perfect the details of this report, and to correspond with the various agricultural colleges, and with other persons that may be deemed fit, and endeavor to secure the carrying out of these experiments in the various parts of the country.

Mr. Hamilton—Does it not seem premature for us to appoint a committee of this sort, before we have a permanent organization? Will it not be well for us to wait until we have agreed upon some form of organization, before presenting a report like this for the action of all the colleges? It might modify their action in some respect.

The President—I would state for the information of the gentleman, that the matter of permanent organization is already disposed of. This particular business is now before the present Convention. The matter of permanent organization was referred to a committee consisting of he officers of the present Convention, for them to correspond and ›erfect it. If we await their action, we will not get any business done.

Mr. Hamilton—I am very anxious it should be accomplished before re leave; but I do not understand the present situation of things.

Mr. Flagg—I would add in explanation, that the very reason of my ıaking this motion, was the fact that we have no permanent organizaion; that is, a continuous one fully officered; and I wanted to secure nmediate action in obtaining these experiments, although our organiation is not perfected. Otherwise it would properly go into the hands f the Executive Committee.

The motion was adopted.

Mr. Daniels—I move that Mr. Flagg, Mr. Miles and Mr. McAffee, onstitute that committee.

Mr. Flagg—I hope I will be excused from serving on that commitre, in order to have some gentleman from further East put on in my lace. I think it would be well to have these gentlemen distributed s much as possible. I would nominate Mr. Hamilton.

Mr. Hamilton—I am very certain that Mr. Flagg will fill that posion much better than I could, although I feel very much interested in ; but he has had probably more experience than I have, in this matr. I am willing, however, to act on the committee if it is thought esirable, but I would not like to take the place of so good a man as r. Flagg.

Mr. Flagg—I would move an addition of two members to the comittee.

The Chairman—That would make it too cumbersome.

Mr. Flagg—I should like to have a representation from Pennsylvaa. I hope Mr. Hamilton will consent to act.

Mr. Hamilton—I think if there were probably more members on e committee, it would enable us to act probably more intelligently an when we are so few. It might be better to have the experience men in different sections of the country, so that gentlemen from the outh, and those from the extreme North, can have a voice in this atter, it seems to me, to take into account and regulate the characristics of their countries. I will make a motion that two persons be lded to this committee, which shall consist of five instead of three.

The motion was adopted.

Mr. Flagg—I nominate Prof. Hamilton, of Pennsylvania.

Prof. Hamilton was elected.

Mr. Miles—I nominate Prof. Prentiss, of New York.

Prof. Prentiss—I would nominate Prof. Caldwell. He would probably be able to serve the committee much better than I would be able to do.

On motion, the Assembly adjourned to 7:30 this evening.

EVENING SESSION.

Met, pursuant to adjournment, at 7:30 P. M.

REPORT.

Mr. Flagg suggested that some action should be taken to remunerate the publishers of "THE PRAIRIE FARMER," who have secured a short-hand report of the proceedings of the Convention, at a considerable expense, either by ordering a large number of the papers containing the report, or by having the report printed in pamphlet form.

After discussion, on motion of Mr. Flagg, the matter was referred to a committee, consisting of the officers of the Society, with power to act.

Mr. Flagg was requested by the Convention to attend to the revision of the copy before publishing.

The order of business for the evening was then taken up, being

EXPERIMENTS AT THE PENNSYLVANIA AGRICULTURAL COLLEGE.

Mr. Hamilton—The Agricultural College of Pennsylvania, Mr. Chairman, was opened for students in 1859—among the first of the colleges of the country to throw open its doors for the admission of young men whose object in coming there was to get a better knowledge of the principles of agriculture. The gentlemen who conceived this idea had for a long time before been thinking of the matter, but it had not taken proper shape until about 1856, when the question was agitated as to the probability of the States being able to get land to endow colleges such as these. It was seven years after this time that these States did get the land, the first bill being defeated by Congress, as you know. The college began right in the woods. It was not, as the gentleman stated here the other day, in a state of nature; it was a sort of unnatural state. The ground upon which the college was built, and its farm, was full of roots—of what we call grubs in our country—of land that has been cut off repeatedly for timber and for ore furnaces; so that they had to go to work right in the woods. It cost us $25 an acre to clear our land. It was, in addition to that, very stony, and we had all these difficulties to contend against. The college started without an endowment. When the students first entered the college, about one-half of the building was up, but it was considered unadvisable to defer longer the opening of the college. Dr. Pugh was its first President. He, as you all know, was a gentleman eminently qualified for this position—for the position of President of an agricultural college. He had a peculiar knowledge; he had a special training for this business. He had gone to Europe and studied there. He had taken his degree of Doctor of Philosophy in Germany. He came to England and was conected with Lawes and Gilbert in their experiments. He was a first class chemist, an extraordinary man, versed in pretty much all of the sciences with which we are acquainted. He was not a literary man in the sense that we mean when we speak of a man who has an intimate acquaintance with the ancient languages, but he had an acquaintance with the modern languages, and was a very well educated man; and besides this he was what we call practical, that is, he had good common sense, and he knew how to apply it. I know that the term has become rather offensive here, but it expresses the idea. During his administration the college was filled with students. They turned a great many young men away. They took but the best young men, who seemed to have ability. They made a mistake, however, in putting their terms entirely too low—only $100 a year. This put the college in debt; it could not run at that rate. They hoped, with the great number of students and the amount of income that they would derive from them, to pay all their expenses.

The corner stone of this college was educated labor. Dr. Pugh objected, when he took charge of the college, to this principle of labor that the Trustees had impressed upon it. They told him that the labor question must go with this college; that it was the distinctive feature; that it was in this that they differed from other colleges, in making labor honorable and respectable, and they told Dr. Pugh plainly that if he did not wish to take the college on these terms, then somebody else would have to take it; that if there was any distinctive feature in their college, if they had any idea of what an agricultural college was, it was that labor must be connected with it. This labor was carried to a greater extent, probably, than in any other college in this land. The students did everything. When I say that I mean that they did everything. They went to the kitchen and did the cooking. They waited on the table; they washed the dishes. They did all the work that was done on the farm and in the garden, and in the nursery, in the workshops, in the college—cleaning out halls, cleaning out privies: all the work was done by the students. Each student was required to work. This was carried on during Dr. Pugh's administration, until about 1864. The college was successful up until about that time, when he died. I may say that about 1863, a good many of the students went to the war. This was its first stroke. The building was completed, and when it was completed it had a load of debt of some $80,000 upon it. This was in the shape of bonds, and the interest on these bonds had to be met. The students that left this college at that time did not come back. They got into the army and then came home and went into business. Dr. Pugh in the meantime died, and the college for almost a year was in a state bordering on chaos. The Professors of the college attended to the finances, and also to the administration of affairs. The students were discouraged to some extent by this want of organization.

At the beginning of the year 1865, Dr. Allen, of Philadelphia, who was formerly President of Girard College, was elected President—a very able man, and one eminently fitted for this position, a farmer himself and a thoroughly practical man. He brought a good number of students with him, but at the end of two years, owing to some difficulties which I will not explain, he was desirous, compelled by his circumstances, to leave the college; there was no inharmonious feeling between him and the officers of the college, however. It was entirely a matter of his private affairs. This was unfortunate; students went with him. General Fraser then came in. Dr. Allen, I may say, tried to modify this labor system. He told the Trustees that if they would do away with this labor system he would fill the college inside of two years; and an effort was made in the Faculty to do away with this system of labor, and it was abolished to a great extent. The students at that time were not required to do these offices in the kitchen and dining-room, and to work about the buildings so much. Dr. Allen left us and the college began to deline.

Gen. Fraser, who was at Canonsburg, came there and took the Presidency of the college. He drew up a paper that was signed by the Faculty, protesting against this matter of labor—an able paper, which I wish would be read by the members of this Convention, each of them—giving the reasons why the labor system was not practicable, why it was not profitable. I will not give an opinion as to the value of the paper. I have some views that differ from it to some extent, yet there are many suggestions in it that are valuable. He gave the matter thorough investigation. The consequence was that the Board of Trustees, who had established a college in which they laid the corner stone of labor, changed their views and said that they would allow the President of the college to carry on that institution without labor; did not require the students to work, but allowed them to work, and a compensaton was given to all such as desired this opportunity. This was carried on until the latter part of 1868, when General Fraser left, having been elected to one of these Western universities, in Lawrence, Kansas. He took charge of that University as President, and has succeeded, I understand, very well. Our college by this time had become so depressed that it had run down to about twenty students, although we had a Faculty that would compare with any college in this land. They were gentlemen eminent in their deparments. In zoology, Professor Clark, who is, probably, second to none in the country, and in chemistry was Dr. Caldwell, now of Ithica; and gentlemen of like stamp in all these departments; and each department was divided up, presenting every opportunity for a student who desired to gain a first-rate education.

I go into these details for the purpose of introducing this thing, to show our condition at the time when we inaugurated this Experimental Farm; partly to show you the progress of this labor system in our college, where it was, as you see, tried from one extreme to the other, and afterwards, if time will allow, I will give you our present status in this respect, of labor, and maybe a little bit of military history.

But at this time, the fall of 1867, or the spring of 1868, the Trustees became alarmed about the college. They thought that we were certainly now broken up; that all the money that had been expended and all the trouble that they had gone to, and it was not a little, had been in vain. The Trustees met at Harrisburg, to consider the state of the college; what they should do in order to resuscitate it; what they should do in order to commend it to the public. It seemed to have lost the confidence of the public, and in the course of their deliberations, they resolved, as they had not sufficient time themselves to determine the matter in their session there, to appoint a committee who should take this matter into consideration, to see what should be done. They had done everything that they knew. They had established a curriculum that was an honor to any college, and now they cast about to see what else they should do. All of these things had failed. They appointed this committee, and they immediately went to work. They began asking people what this college ought to be. They wrote to people; they consulted their friends; they consulted men everywhere—other colleges in regard to their success—to see wherein we did not meet the public wants; why it was that we had lost confidence, and why it was that we could not get students. We had this endowment; the land scrip had been given to us entire. Now what we wanted was students. We had all the material, all the apparatus that was necessary. And the consequence of the whole thing was that this committee, after a great deal of exertion, came to the conclusion that they found two things that the people seemed to need. They seemed to think that the sort of education they wanted was an accurate knowledge of the process of agriculture by actual experiment. They had tired of theories. We had been theorizing on agriculture and doing our best to give the theories in connection with it, and these gentlemen had failed to see that they were of any value. Our experiments that we did carry on—and those we had were carried on by a gentleman who is a chemist, and who is a very careful man—our experiments amounted to nothing; owing to their transient character, they elicited from nature very vague replies.

The committee found out another thing: that our best farmers thought we ought to carry on a series of experiments at the college to demonstrate these points in agriculture; that there should be something practical, something that would show to the people where this money that we received did go, that they would get some direct return; that all the citizens of the State should receive benefit from this grant, and not only the boys that came there, but that men everywhere that agriculture men, who had experience in agriculture, could learn from an agricultural college; that it should not only teach boys, but it should teach men; that it should not only teach theories, but it should teach principles in agriculture that had been developed from theory by practice; that these were the things they wished. They were tired of these theories advanced in books—a multitude of which are fruitless—and men of means had experimented until they had given the matter up in disgust. Some men, too, felt that there was a necessity for these experiments being carried on at the college, because the college received money for this purpose, and that private individuals could not afford to carry on a series of experiments from which people could derive much benefit, owing to the cost of the experiment.

Another thing was that they could not hope to carry them on for any great length of time, and another matter that affected them was that their farms, changing hands by the death of persons, these things might go for nothing, and nobody would profit by their experience. And so the committee reported to the Board that there seemed to be a demand for some plan by which this scientific agriculture could be reduced to practice, by which people could be made to feel that we were working in their interests. The Board of Trustees seemed to see the force of the argument of these gentlemen, and the result of the matter was that they placed the whole subject in the hands of a new committee, and gave this committee the injunction to draw up some plan for the working out of their ideas, and it resulted in this: that they considered that a series of experiments should be carried on at the College Farm; that a portion of our College Farm should be put aside or the purpose of making these experiments; but in considering the whole matter, and in attempting to draw up a line of procedure, some system by which they should be governed, they found that the difference in soil and the difference in climate must be considered, and that in order to give the widest scope, and that our experiments might produce the greatest benefits, they thought that it was necessary to test these experiments in differents parts of the States—similar experiments under different conditions, as isolated elevation, temperature, and so on. They then reported to the Board this much: that they thought some plan should be devised by which the college could distribute its experiments to different parts of the State. The matter was concurred in by the Board; they saw the force of the argument, but they did not see how it could be accomplished. The college was too poor to buy; it could not buy these farms and it could not rent them, because it was inconvenient; they could not rent them for any considerable length of time, and nobody would give them to them; so they did not see what could be done. After a good deal of consultation it was determined to go before our State Legislature and just present the matter to them. We were a little afraid of the Legislature, that they would partake of the same prejudice that had existed against the college through the State.

The Chairman—Allow me to state that there are some gentlemen who will be obliged to leave by the trains, who would like to hear of your experiments, and the historical part ought to be omitted for their benefit.

Mr. Hamilton—I will go over the matter briefly. The three farms were instituted by the Legislature appropriating one-tenth part of the principal of the college scrip for that purpose, and the farms were located by a committee of the Board, after a great deal of trouble, one in Chester county, one in Indiana county, and one at the college in Center county, one hundred acres each. About thirty-five acres of these farms was set apart as experimental farms. The other was farmed as a model farm. The programme of experiments, I may say, was drawn up by the committee of the Board of Trustees and other gentlemen from different parts of the State, who were interested in agricultural experiments. This programme, as it was drawn up, was made irrevocable. No matter if a Professor of Agriculture in the Agricultural College, or the President of the Agricultural College should leave, no matter what should take place, this system shall be carried out; it is the action of the Board. It was got up by the Board of Trustees, and these experiments were imprinted here by the Board of Trustees themselves. They are irrevocable; they expect to carry them out as they are, allowing those plats that have received any error to go through, and noting their errors, counting them of no value, but not changing the system because some of the plats have been found to be erroneous.

The committee, who drew up the plan, considered that there were three points upon which men desired information. One object of the experiments was to demonstrate the rotation of crops and the methods of culture. Another was the difierent applications of manures and their effect upon soils. Another, the different sorts of grain; trying experiments as to the comparative value of the different sorts of grains, seeds and vegetables. These were the three ideas that they intended to develop, and all their experiments were made to tend to this end; the object was to have them tend in this direction.

The matter of rotation of crops was tried very cautiously. They saw the difficulties that were in the way, and they agreed that the common system of rotation of crops was probably the safest one to take at first, so they took what we call a five years' rotation of crops. The first would be corn, the next would be in barley, or in oats, or in potatoes; and the next would be in clover, and the next year in clover, making a five years' rotation of crops. This is the rotation of crops that is common there.

A few of the experiments go to show the effect of a change from barley to oats, or from barley to fallow, but these are the only experiments in the rotation of crops that we have.

The next object was in the methods of culture, and in these methods of culture they used different sorts of plowing, for one thing—the difference between shallow and deep plowing—to continue these experiments year after year, and see the relative value of shallow and deep plowing in our soils. These are matters that are of great importance to us, for if we have to subsoil our land it involves almost a double expense. To be profitable, subsoiling must effect great results, both in produce and the improvement of our land.

They form a comparison between two plats. They found that it was necessary, in order to demonstrate anything in this matter, to make but one experiment upon one plat.

I think I have gone a little too fast in telling you of this rotation of crops. There are five tiers of plats, running up to 44, making five times 44—220 plats altogether. An experiment is tried in the five years rotation, on five plats right through. Plat 1 would be in corn one year; next year 101, receiving the same treatment that 1 did, would be in corn, and 1, instead of being in corn, would be in barley; and the next year 201 would be, we may say, in corn, and the one before that, 101, would be in barley; the one before that, No. 1, would be in wheat. So on; 301, in the fourth tier of plats, the fourth year, would be in clover; the one before that would be in wheat; the one before that would be in barley, and the one before that would be in clover, and so on, continuing these experiments through these five years rotation, and giving to each of these five plats the same method of culture.

We have, then, another principle besides this matter of methods of culture, which is, to test the different ways of planting seeds. Take corn, for instance, to see which is the best, to plant end grains, to plant butt grains, or to plant center grains; to plant grains one foot apart in a row, six inches apart in drills, or to plant them three feet apart in hills, with three in a hill, or two feet apart in hills, with two in a hill, and various other experiments in regard to different ways of planting corn.

Then they tried the effects of fertilizers. Notice each of these experiments has a distinct system of plats to itself. And so in the matter of manures. We have lime, twenty-five bushels to the acre; lime, fifty bushels to the acre; lime, one hundred bushels to the acre; lime, two hundred bushels to the acre; applied in different ways, to show its relative merits, its effects upon the land, and to see how long those effects continue. All these are compared with land that is not limed, that never has been limed, and the plats lie as nearly in the same condition as possible. They are in the same slopes, if possible the same sort of ground, not going from a clay to a slate, or to any other sort of ground, but retaining the clay for the same experiment.

Different sorts of seeds are used; the advantage of sowing half a bushel of wheat to the acre, a bushel of wheat to the acre, a bushel and a half, two bushels, three bushels. The same way with timothy seed or clover seed, giving the different ways in which these things shall be sowed, and see by comparison, by weighing the result and accurate observation what the relative differences are between these series of experiments.

There were gentlemen, too, in our State and in other States, who were anxious to compete in the matter of artificial manures. A series of plats were set apart for them, and they furnished artificial manure, different compositions, giving certain statements of their composition. We bought in the market, without the knowledge of these men, certain other quantities of these manures, so as to test the fact as to whether they were genuine articles or not; whether they were a fair sample on not. These manures were applied and their virtues are expected to be determined to some extent by these experiments.

We have, besides that, another tier of plats for experimenting in grains, different varieties of grain, seeds and vegetables. These are set apart entirely to this purpose, and seeds are put on those plats and acclimated, brought into such condition that although they might not succeed the first year, yet they are tried again and again, and attempts are made to acclimate these seeds; and one of the objects of this whole matter of experimenting in these different seeds is to find out what seeds are adapted to one sort of climate, and find what seeds are adapted to our own State, and then when we have found out a number of varieties that seem to do well, and tried them on our model farm, and thoroughly tested their virtues, then distribute them to the farmers over the State, at the regular prices of wheat, not charging the fancy prices that men charge who keep wheat for sale and make a business of experimenting for profit, but to give them at ordinary prices. The idea is to disseminate these seeds through the State, that farmers may get the benefit.

This, gentlemen, is, in brief, an outline of our series of experiments. We publish these experiments in pamphlet form. They are only what you see; we do not as yet attempt to draw any conclusion whatever from them. It is done exactly as the programme has prescribed; that is followed out to the letter. Wherever, through accident or neglect, any discrepancy does exist, that is noted on the books, and will be considered in any general collection of these things, or any report that may be made of them when it is attempted to draw conclusions. We think that if these experiments are carried on for a number of years and are then compared one with another, probably some light will be thrown upon these three objects which we have attempted to experiment upon, namely: the rotation of crops, and methods of culture, the relative value of different sorts of artificial manures and fertilizers, and different values of seeds, grains, vegetables, etc., that are cultivated by farmers.

We have a system of bookkeeping, which I will not present to you, as it would take up more time than would probably be desirable.

The Chairman—I would like to inquire of Professor Hamilton whether you have any guesses.

Mr. Hamilton—We give exactly what we get. Our report is just exactly what we have received. We make no comment on it one way or the other. It is in exact accordance with the programme that has been prescribed by the Board of Trustees and carried out to the letter. These things are weighed exactly, weighed at different times, under different circumstances. This does not give all that we have in connection with the matter. It is given merely as a sort of synopsis of the experiments. We have in our books a more complete account. There is no guess at anything.

The Chairman—My point is this: You say you don't publish the result. My question is whether among yourselves you didn't have some hypothesis—didn't have ground for some shrewd guesses as to what the result would be in some respects.

Mr. Hamilton—There has not yet been anything sufficiently developed to give us ground for anything of that sort. One curious thing that we have this year—it is a curious thing; it may not do it again; we don't know, and that is the reason we want to try it if we can—was that our fallow went ahead of all our land; that we raised forty-two bushels of wheat to the acre off of fallow, and these plats are one eighth of an acre plats. That surpassed our others very much. It could be told by anybody looking at it; but whether even that is profitable, whether it is profitable to allow the land to lie and go to fallow, is another question. All these things come in when the result is made up. That is all we pretend to give, just the things as they are there. They are in accordance with this programme that has been prescribed, and we don't pretend to draw any results as yet, thinking that it will be premature, and that no man can draw results from single experiments. Two years this has been in operation; this is the third year.

Mr. Flagg—Do I understand you to say that the fallow is a part of your common system of rotation?

Mr. Hamilton—It is in some instances.

Mr. Flagg—You mentioned that you had adopted this system that was common in Pennsylvania of the rotation of five courses, of which a fallow, I understood you, was one.

Mr. Hamilton—A fallow is sometimes used. If land is weedy we use a fallow oftentimes, to kill the weeds; or if it is disposed to go to certain sorts of grass, we use it for the purpose of killing the grass; or if land is rather poor, use a fallow, feeling that it eases the land, and gives it the benefit of the action of the elements during the summer. The best farmers farm every acre of their farms each year; no waste land at all; every acre must produce.

The Chairman—Any remarks will be in order upon the report made by Professor Hamilton.

Mr. Flagg—We have not heard from Wisconsin much in this agricultural experiment matter.

Mr. McAffee—I wouldn't like to trespass upon the time. If this military matter is a matter of considerable interest, I don't wish to take time.

The Chairman—Everything is of interest.

Mr. McAffee—I can give a short history of our experimentation, but it is for so short a time that perhaps it would not be of any great advantage. Only this year is all I know about it.

WISCONSIN EXPERIMENTAL FARM.

Our experimental farm is located upon the Huronian drift. The soil is mixed, composed of a detritis of a drift which has come from the North, mostly derived from granite and trap rocks, and is somewhat sandy. It is of such a nature that you cannot tell by an analysis of the soil on one square yard what may lie on the next square yard; but as it was mentioned here, to-day or yesterday, that the analyses of soils are not to be relied upon, I think there is a plain case where they are not to be. There is also an admixture among this drift of the older formation, some of the latter, fine stone and sand. This lies on the shore of Lake Mendota and is perfectly level. Some of it needs underdraining; it has not had it. We have only 33 acres under the plow. As I have 146 experiments running this season, they were necessarily divided up into small plats of ground.

The first thing that was taken into consideration this spring, in laying out a series of experiments, and the thing of the most importance, was a line of experiments in which we can reach results soonest, and communicate these results to the agricultural classes who are looking to these colleges soonest, and with the best results; that is, the testing of a variety of different crops. We all know that seedsmen and these private experimenters that are spoken of are very busy in pushing their commodities before the public, and there is a great deal of swindling and humbugging, naturally, and if any institution, with the dignity and with the reputation that one of these industrial institutions has, can be brought to test varieties as soon as possible, no matter what the seed costs, test them just as quick as possible, and let the results that follow —the actual results, without very much comment—go out among the people, there is no doubt that a great deal of money can be saved to the agricultural classes, and that some knowledge can be disseminated in that way. Therefore, we have tested, so far as we could get varieties, varieties of different kinds of grain. We tested some eleven or twelve varieties of oats and a number of varieties of wheat. I did not bring my books along, and I cannot tell you exactly how many, and a number of varieties of corn and barley. Our experiments have been generally what I call successful experiments, for the reason that we commenced in the spring and we have not as yet detected any errors. That is what I call a successful experiment. I don't care if you don't raise a crop; if everything fails, it may be a successful experiment; if you succeed in trying an experiment right straight through, and don't find any errors in it, and have reason to believe there is no error.

In this connection I wish to say one word, with all deference to higher authorities, about something that Prof. Miles said, I believe it was yesterday. He was telling us about elements of error. I don't like the use of that word "error." There are conditions which prevent certainty of results; there is no doubt about that, but why are they errors? I can't see it. I think that if a person tries an experiment, and in their measurements and in their weights they are just as accurate as circumstances will allow them to be, it is reasonable and proper to say that there was no element of error. There is an element of uncertainty running all through it, because we cannot control the elements. We cannot bring the rain when we want it, or the clouds when we want them. We cannot control the constitution of the atmosphere. There are thousands of things that we cannot control. These are elements of uncertainty, but why are they elements of error? If we try an experiment on a tract, and try it carefully and fully, and don't get our ideas wrought up to such a high pitch, that we are going to fix results from that one experiment, there is no error about it. If we think we are going to discover the laws of nature and understand the science of agriculture right off, we are in error in the beginning, and the error is not in the experiment. The science of agriculture is an accumulative science, and never will be all known in all human probability.

We next tried a series of experiments in reference to the durability of wood, for the reason that the fencing problem is a very large problem in the West, and we wished to try experiments upon the durability of wood, by using artificial agents. We tried a number of these experiments, and of course the results cannot be known for a number of years. Whenever wood rots that we have tried to preserve, why we know that that experiment is completed as far as that wood is concerned. If some of them last forever, we will never complete the experiment. We have not as yet tested but one piece of European larch, which is said to last pretty nearly forever, and of course we will have to wait a long time for that.

Mr. Flagg—I want to ask you how many sticks or posts, or whatever you use, do you put under the same conditions?

Mr. McAffee—From 25 to 150.

Mr. Hamilton—What size?

Mr. McAffee—They vary from two inches in diameter to four. One of the experiments is testing them top downwards, with medication. Another experiment is testing them top upwards with medication, and then a lot not medicated at all, put top downwards and top upwards.

Then another experiment is in regard to the amount per acre to be sown of small grains, wheat and oats. We did not test it as to barley. We took the amount of wheat from three pecks to the acre, broadcast, up to two bushels to the acre. We ran the experiment with oats, from a bushel and a half to the acre to three bushels to the acre, varying half a bushel each time.

We organized a series of experiments with deep and shallow plowing, and subsoil plowing. This tract was planted with corn.

Another small series of experiments was to test as to the yield of small grain to the weight of the grain as depending upon the kind of grain sown, whether well cleaned, the heaviest grains taken in just as it is ordinarily taken out of the bin. For instance, sow a quarter of an acre of oats just as they are taken from the bin. Another quarter of an acre alongside, under the same conditions exactly, with the exception that we blew the fanning mill as hard as we could blow it, and got all the heaviest grains; blew out more than half.

Then we tested top dressing after the grain was planted, partly to show whether there would be any good results in retaining moisture by mulching, and also by the use of peat, which is black, or nearly black on the surface, as our land is a light gray, almost white, for the purpose of finding whether the color had much influence.

Another series of experiments was with planting corn. We planted corn one grain to the hill, 13 inches apart, and were very careful in getting the distance, and the rows four feet apart. Then some right alongside of it, two grains in the hill, 26 inches apart, and the rows four feet apart. And then some four grains in the hill, 52 inches apart, each time multiplying by two, multiplying the number of grains in a hill by two, so that the same number of grains is on the same area; the only difference is in the distance apart.

Another experiment with corn was, with the hills three feet and a half apart each way, and three grains to the hill, tested alongside of corn with the hills four feet apart each way, and three grains in a hill.

These are a few of the experiments. We have a number of others, and I must say, in closing the account of the experiments, that I feel very much more encouraged about the actual results that may flow from experimentation, than most of the speakers who spoke here, especially yesterday, and some to-day. The difficulties I do not believe I am disposed to underrate. I know they are immense. There are difficulties that can scarcely be surmounted by human wisdom and human contrivance, but for all that, it seems to me there is just about as promising a field for investigation from which to derive instruction in this line of actual experimentation in farm operations as there is in any direction. I believe that it is just exactly as easy for us to find out important facts in agriculture as it is to take the chemistry of to-day, and find out important facts in organic chemistry.

Mr. Miles—In this experiment with a different number of kernels of corn in a hill, how many plats of each had you?

Mr. McAffee—One plat of each only.

Mr. Flagg—How large?

Mr. McAffee—I could not give you the area of each.

Mr. Flagg—About, could you?

Mr. McAffee—I should judge it was, at the least calculation, ten square rods—one-sixteenth of an acre, I should think it was.

Mr. Miles—How many times has this experiment been tried?

Mr. McAffee—This is the first; I can say that I find no records that are satisfactory of former experiments, so I cannot tell what has happened before this year. I had nothing to do with it.

Mr. Miles—Of the different kinds of grain that you have been testing, this is the first time?

Mr. McAffee—No; they were tested last year, and I found them in the bins, with the record of the weights per bushel, and the yield.

Mr. Miles—I will inquire if the same results were obtained last year, as are obtained this year?

Mr. McAffee—this year's results are not completed. So far as the threshing is done, the result seems to be very similar indeed.

One more remark, that is this: I feel a great deal of interest in this question of student labor. We had student labor in our institution when I went there, and I did all I could to encourage it, and I believe that good results, followed, results probably, that may be more apparent years hence than they are now; but, from some cause or other, I understand that our governing power, the Board of Regents, as they are called, decided not to continue the student labor, so I suppose we will be without student labor in our institution. I suppose that difficult question has been eliminated.

Mr. Flagg—What has been your experience with student labor?

Mr. McAffee—I found, very much to my surprise, that, taking the average of student labor, under the rule that I was working under, that the twelve and a half cents an hour that we paid for student labor, I thought was well expended as if I had gone out and hired laborers at that price. I could have hired laborers at a higher price that would have done more work, but I think that the average of the student labor that we had on the farm was worth twelve and a half cents an hour, as the market price of labor ran. I will say, though, that I think it would not have been if it had not been that I had the power of dockage, and I exercised that power carefully. I docked time. I classified the students. I notified them at the beginning of the work that I should exercise the power of dockage if I found, from any cause, either inability to perform the work they were given, inattention to rules and regulations and instructions, and the way the work should be done; or idling, such as conversation without any results, conversing and stopping to converse. If I found any of these that I should classify them and dock them according as my judgment would dictate during the month; and I classified them into A, B and C classes. A class had full time, B time was docked ten per cent., C time was docked twenty per cent. I had occasion to dock one student twenty per cent and out of fifty-four, I had occasion, during the month, to dock only eleven ten per cent. The next month there was no need of any dockage at all. Everything went on first rate, and I believe there was not one of the students but what acknowledged to me personally that they believed the dockage was just and correct, and they thought it was the proper thing to do, and it did work all right. I had some little doubt about it at first.

Mr. Hamilton—Do you pay for disposition, or do you pay for work—the amount that is done, or for the disposition to do it?

Mr. McAffee—It is a pecuniary matter, and we pay for work, not disposition. If a student has not the power or constitution to do the work that he is set to do, we don't pay him the full price.

Mr. Miles—In regard to these plats of corn, with a different number of kernels in the hill, what shape are the plats? You say they are about ten rods.

Mr. McAffee—They are 32 rods long and very narrow. They are in rows. I run a four foot marker through, and then I had to invent a machine to mark it.

Mr. Miles—Mr. President, I wish to make a few remarks. I don't propose to follow Mr. McAffee in regard to rows of corn. I care not whether he calls it uncertainty or error. There is something that causes variation that we cannot measure. I am very glad to see that they have commenced so large a number of experiments, and I am very much pleased with the spirit with which he enters into it. I am not at all surprised, however, that the gentleman is very much encouraged in regard to results that may be derived from it, and if the experiments are continued in the present method, I have no doubt that he will continue to be pleased with the results; it will be very satisfactory, indeed. But if he adopt a slight modification, I apprehend some difficulty might arise. If you take these plats, one in a place, then two in a place, then three in a place, and so on through, and when you get through only one plat of a kind, you will be very much-pleased with the result; but if you cut these strips up, and I would recommend it now, you can make accurate measurements, and draw lines across and cut those strips up into 20 or 30 pieces, and then compare No. 1, No. 2, Nos. 3, 4, 5, and so on, precisely the same character of experiment. You will find the result varying so you will hardly know what is the matter; and besides, if you have, right alongside of these same experiments, a number of plats treated in the same way, you will find as much difference between those all alike as you will find between the corn with the different number of grains. There is the diffculty.

Now in regard to this matter of different kinds of grain. I have had perhaps a dozen applications this summer for the best kind of oats. We have raised quite a large number of varieties, and have raised them for a number of years, and I cannot tell which is the best. I don't know. What was the best three years ago was the poorest last year. The crops are not all threshed this year, so I don't know. I can judge somewhat from appearance; what was the best last year I apprehend will not be found to be the best this year—so that it becomes really complicated. The first experiments are easy, and the results are all satisfactory, until you come to duplicate them. When you duplicate plats, and begin to compare between plats exactly alike and between those under different conditions, you then find the difficulty in getting at exact results.

Mr. McAffee—That matter had occurred to me, and I can easily conceive of what the Professor has said, being exactly so; but for all that it seems to me that here is a point in regard to these larger plats, and I am in favor of the larger plats I must say, even if we have to hire extra help to harvest. All you can ever get in this thing is not absolute certainty on account of these circumstances that render things doubtful, but you want to get a general average, as large as possible, stricken with as much accuracy as possible. We don't know how many people are going to die in a year to the thousand of a population, but the Life Insurance Companies come very close to it, because they have had the general average so many years they know about how the thing runs. They know the laws of chance, as you might call it; perhaps it is an unfortunate expression. They know about how the thing will run. Now, we can go so far by a great many experiments as to get a general average. The idea has suggested itself to me, frequently, that it would be a very good thing to divide off a lot of plats, and raise A, B and C on those plats one year, and then change, something on the system that they have in Pennsylvania, and in that way get at the actual characteristics of the actual areas; but it seems to me by subdividing areas into small plats, taking twenty to the acre for instance, we are making our labor much greater. Let us get the general average of that acre as a grain producer. For instance, we take the general average of that acre as compared with other acres of corn; the general average of that acre as compared with other acres of oats and wheat, and it is valuable so far as it goes. Now we consider that acre as either better or poorer than other acres, and go on with it. It seems to me of no use to divide the acre up into twenty plats, for if the argument is good that it should be divided up into plats of a foot square, even, or an inch square, I don't see where you are going to stop if you argue in that way—that because the land gives different results on different areas you must make the areas small. Let us have the result from the whole acre. I know from the appearance of that corn experiment that what the Professor said is correct. If I cut that piece up into strips and harvest it, I know some places will be poorer than others, and I believe I know the reason, but that is a guess of course.

but that don't prove that the general average is not correct, as a general average.

Mr. Miles—No; but let me explain that. Divide those up, and take the general average of those. You find a certain range of variation, and then you find, on comparison of this with another, a certain result. You must deduct from that this variation, that is, you don't get as much grain as you think for, unless you take into account the variation. If the argument, as presented here to-night by Mr. McAffee, is the one that I have presented, I have been very unfortunate, indeed, that these plats should be subdivided because of those variations, but in order to diminish the chances of variation. It is understood by everyone that the slope of the plats should be the same. Now take the plat of an acre, and it is exceedingly difficult, in many places, to get another plat of an acre of precisely the same slope; but if you cut that acre up into three or four pieces, you can get three or four pieces of about the same inclination. Now an illustration: Take forty plats, and let the manure be applied in this way: the first series of four plats is unmanured, the next is manured, the next series unmanured, the next manured, and so on alternately through, so if I take any one of these rows through in this direction, and compare them, one-half will be manured and the other half will not. Now if I take the same series in this direction, it will be treated precisely alike. Now, I found by some of my experiments, taking one of these series of plats through, that there was a variation of 66 pounds in the quantity of corn. Taking the plats right down in this direction, no apparent reason for their variation whatever, and the variation is 79 pounds. Now, if I had had a single plat manured and a single plat unmanured, the experiment would have been very satisfactory, but when we come to subdivide it and multiply it, this element of uncertainty comes in. I will not call it an element of error, if that is an objectionable term.

Mr. McAffee—I would like to ask Prof. Miles in regard to this question. I regarded his suggestion yesterday in regard to dividing off pieces, with a piece of ground between on which there was no crop raised, as very timely and very valuable. I have seen the want of it this year. Because I did not know any better, I planted adjoining, but I believe I will never do it again if I can help it; and the question has been a matter of serious consideration as to the best way to get along with it in future, and this idea occurred to me: if I just plant so far apart and leave that ground, of course we know what the result would be: it would be full of weeds. I don't want the weeds on th ground. I don't want the piece of ground injured in its mechanical texture by the growth of weeds. Suppose I cultivate it, I don't think that that is exactly the fair thing either. Suppose I put it in timothy and clover There is a plant growing there and running its roots out and injuring the plat of ground. The idea occurred to me to make it into beds. I would back furrow, and make a dead furrow between them; just take the soil that plants will grow readily in, right out and throw out the beds. Down to the bottom of an ordinary furrow plants do not start so readily.

Mr. Miles—I have thought of that plan, but it seems to me objectionable. We plow our plats so as to leave the lines between one a dead furrow, and the other a ridge, each series of plats with a dead furrow on one side and ridge on the other. When you come to dig down and remove the soil below, if you get an unfair proportion of that upon either side, you are going to influence the result in that way. Then again, the cultivation of this piece excavated will have some influence on your crops, for if you examine carefully you will find the roots running into the sub-strata. It seems to me the only way to obviate this difficulty is to cultivate through and give the same amount of cultivation to each band as far as possible. Then you treat them all alike. Now, when the weeds spring up, with some crops the weeds will get a considerable start before the crop is started. We could go through and pull those up by hand, although they might be numerous. Then, at other times, we have practiced going through with a hoe and just cutting the weeds off, disturbing below the surface as little as possible. These are all difficult things to manage, and require a great deal of thought.

Mr. Hamilton—Let me understand what you mean by weeds. A plant out of place?

Mr. Miles—Any plant out of place is a weed.

Mr. Hamilton—We have what is called grass.

Mr. Miles—Grass we call a weed. I don't care what it is, whether clover or corn.

The Chairman—A stool of wheat in a corn field is a weed.

Mr. Miles—Yes, sir.

Mr. Parker—These dead furrows in our section would not do at all, on account of the drainage. What I was always accustomed to do in Michigan, in raising a bed for onions or beets, or anything of that kind in the garden, I used to raise it from two to four or six inches above the surface, by ditches around it. Do that in Kansas and you will lose your crop.

The Chairman—What is the cause?

Mr. Parker—The rain fall is sudden. The rain does not come down in showers, but comes down in water spouts, frequently.

Mr. Flagg—You have to do your *level best* in that country.

Mr. Parker—Yes, sir. You have to do your level best.

The Chairman—There are one or two topics I suppose we must consider a little.

Mr. Flagg—Mr. Chairman, I want to make one suggestion in reference to this matter of the succession of crops, planting one crop after another. It is this: Plant your crop one year, this year say, in strips, corn first, oats next, wheat in the next, and grass in the last. Then next year turn around and plant across these the same crops. In that way you would have every crop in succession to every other that has been planted; corn after corn, corn after oats, corn after wheat, and corn after grass. It is an easy way of trying the experiment of succession, and is suggested by an experimenter at Munich.

FUTURE MEETINGS.

The Chairman—I find myself under some difficulty. If I may be allowed to interrupt the discussion, for I fear that we may at last get in a hurry and adjourn without having time to think of it. I say I find myself (if it is expected that I act as chairman of the executive committee, made so by the officers of the society,) under some difficulty and embarrassment to meet the other members of the committee, to compare with them upon some of the points that would necessarily come before the committee, if they provide for future meetings. It seems to me a little desirable to secure some understanding with members of the Convention before they all disperse, where and when shall the next meeting be held, if a meeting is called. I will say that it has been suggested as a thing desirable that the meeting of the Convention, if it continues to hold something of the character that it now seems to have, shall be held at the seat of the several institutions in turn; that we give the gentlemen, as they come together at the Convention, an opportunity to make a personal inspection of one of these institutions, of its experimental fields and general condition.

Mr. Miles--It seems to me, if we are to continue the meetings, it would be very desirable to meet at the different colleges, and we could look over the different methods.

Mr. Flagg—There is another suggestion, and that is that we secure more quiet, uninterrupted work, perhaps, at the institutions themselves than we can in any city.

Mr. Hamilton—I think if we do meet, we should meet during the vacations of those institutions, so as to not interrupt the officers of the institutions in their regular duties. I would extend an invitation to the gentlemen to have it at our college in Pennsylvania, if I did not think that in another year probably—in two years from now—we may be able to have a railroad that will take the gentlemen right there; and we have twelve miles of rough roads to go over, and it might be inconvenient. I am very anxious that the system of experiments which we have at that college, should have a thorough examination. I believe that they are important. We in Pennsylvania believe that they are important, that they are worthy of some consideration, and the gentlemen who got them up are certainly not numbskulls. They are gentlemen who have had some experience in experimenting. They are gentlemen in Bucks county, in Chester county, in Cumberland county; and better farms do not exist in this country than those to be found there.

Mr. McAffee—I have no doubt that the management of the University of Wisconsin would be most happy to welcome this body to meet at Madison at any time, if they should see fit. I think I may say there is no doubt of it. I am not authorized, of course, to extend the invitation, because it was not known that this body would continue its organization, but I can state in almost confident terms to that effect; and I like the idea of the next meeting, if we have a meeting, being held at some one of the industrial universities.

The Chairman—I will say that I shall also be glad, the next time, if it is due to Illinois to have the next meeting in our midst, to have them meet at the Industrial University at Champaign. We have railroads north and south, and east and west, and you can meet us quite readily.

Mr. Parker—Would it be possible to meet and not interfere with the terms, as in the Iowa institution it runs all summer, and the others run all winter. We shall have to meet while some of the colleges are in session. But our latch-string hangs out, and we welcome our friends, whether they come on an excursion, or stop on their way to the mountains, or at any other time; we shall be very glad to meet this association. I believe I am authorized, as a resident there, to invite the association to come whenever it sees fit. What is the order of business now?

VOTE OF THANKS.

The Chairman—The general order.

Mr. Parker—I would like to introduce a resolution.

The resolutions were read, as follows:

Resolved, That the thanks of this meeting are hereby tendered to "The Prairie Farmer" Company for the very liberal courtesy extended to this convention in procuring the use of the rooms in which we have met, and in other kind attentions extended to us during our stay in this city.

Resolved, That we also heartily thank the agricultural and daily press of this city for their reports of our proceedings; and the officers of the Riverside Improvement Company and of the Illinois Central Railway for their invitations to visit their respective grounds and railway lines.

Resolved, That our thanks are heartily tendered to the President and Secretary for the official discharge of their respective duties.

The resolutions were unanimously adopted.

EXPERIMENT STATIONS.

Mr. Flagg offered the following resolutions:

Resolved, That the very strong commendation that the agricultural experiment stations of Europe have received from such persons as Johnson and Liebig as a source of a large amount of agricultural science and practical progress, as well as our own examinations into the subject, make us believe the establishment of not less than one such station in each of the several States of the Union, would be eminently beneficial to the agricultural interests of the country.

Resolved, That a committee, consisting of one from each of the several States in which an institution founded on the national grant has been organized, be appointed by the President, whose duty it shall be to memorialize Congress and the several State Legislatures for the speedy establishment of such stations throughout the country.

The resolutions were adopted.

Mr. McAffee—There is one matter that a gentleman who was present here wished to present to the Convention, but he saw that the time was passing, and he had so much to do that he refrained from doing it. It is a matter of great importance, and a matter that I wish simply to announce here as food for reflection, and if we meet again in this capacity, or any persons representing these institutions, it is worthy of being considered. It is this: how best to get a knowledge of the work of these industrial institutions, and of what they are trying to accomplish, and what they do accomplish, before the people. It is a great thing. We well know that the class of the community who are expected to be benefited by the exertions of the officers connected with this institution are the most inert in attending to information about them. They won't even take the trouble frequently to send for the published reports, and it is worthy of consideration whether there is not some other way of getting the information about them—everything about them—all that we can get before the people and make the matter as public as need be. If there is any possibility of distributing printer's ink among them, it seems to me it ought to be done. The simple fact of getting out the reports, and presenting them, and having them printed, and distributing them as well as you can, don't to go far enough. They do good, of course, but it don't go far enough. It seems to me eminently proper that this institute should consider this point.

Mr. Flagg—I think there might be some useful hints gained from the experience of our institution in this State in this respect. I don't know but Mr. McAffee is as well acquainted with the facts, though, in that connection, as I am; he was formerly a resident here. My impression is that a good way to advertise these institutions is to do what we are doing—that is, to go out and advertise ourselves by holding farmers' meetings. We have held them for three years, and while the results have not been as good as I could wish, they have still done an important work in advertising the institution. I think another very efficient thing has been done by our Regent this summer, in publishing a circular—publishing our catalogue, in the form of an illustrated circular, which has been distributed to the amount of 20,000 copies, and nearly paid for by the advertisements on the covers. It was a good financial operation, and I think spread the name of the institution broadcast throughout the State, and to some extent in other States. I think that is another good way of bringing the institution before the people.

AGRICULTURAL LECTURES.

Mr. Parker—In regard to these meetings, that is a matter that we have not discussed in the society. We feel a great deal of interest in it, and have held some meetings—but one or two questions in regard to it: One is, whether, in the employment of those who are specialists, bringing them from abroad is necessary, or merely using the faculty and board of control of the College—that is, the material out of which the institute is made up; whether it is your faculty—those who naturally associate with you, or whether you procure from abroad lecturers—specialists.

The Chairman—Use the faculty to some extent.

Mr. Flagg—I believe we have had now three courses of these lectures in different sections. The first winter a two weeks' course at the institution itself, at the Industrial University. The second year one of one week, I think at the Institution; one at Rockford, in the north part of the State; and one at Centralia, in the south part of the State. Last winter, I think, we had four—one of two weeks at the University; one at South Pass, pretty well toward the southern end of the State; one at Pekin; and another at Springfield, or rather a few lectures were held there without any attempt at a regular institute.

Mr. Parker—Did these follow each other close together?

Mr. Flagg—That was according as it was convenient to those participating as lecturers. In those cases we have used the professors of the University to a considerable extent, and particularly outside of the institution, where they were carried among the people, not desiring them to lecture so much at home as they did abroad. On the other hand, as far as the institution itself is concerned, it has been rather a policy to bring outsiders in, to bring the practical minds, as they are called, into the institution. The policy of that, in part, was to bring our teachers and our people into closer relations to one another. The two first years, I believe, the teaching was mostly by single lecturers—by one person; that is, each professor delivered but one, or perhaps two lectures. During the last winter, and to some extent the winter before, there has been considerable done by one person. For instance, Dr. Hull, who was here yesterday, and Dr. Miles went to several places and delivered two and three lectures at each. There were some advantages in that, but one of the more special features, perhaps, was in getting in—although they may know less about it—the practical men who are not ordinarily engaged in teaching, and are not entirely *au fait* in the matter of communicating knowledge. We find in these cases some advantages and some disadvantages; they throw some new light on a great many matters. They aid our professors in thinking, and they waken them up, I think, to a considerable extent, giving them some new views of things, and they, perhaps, draw out the opinions and discussions of practical men which are valuable, better, perhaps, than regular teachers would do. The results of these meetings I take to be two-fold—they instruct the teacher as to the wants—the professors who go out, at least, and who are present at the meetings—they instruct them to a considerable extent as to what the people want the subjects in which they are specially interested, and on which they want information, and I think they are valuable to the people in bringing them more in relation to men who have a more scientific method thanour ordinary farmers have. I think if agriculture is going to gain anything in this century, especially it is to be in the getting hold, as our farmers are seeming to do, of a scientific method—that is, a careful induction of facts—and coming in contact with men who are scientific in their character, as most of these professors who go out to give lectures are. I think they learn a great deal in that direction. They get hold of the reason of a great many facts, too, which they knew as facts, but did not know the wherefore of them. Upon the whole, I am inclined to believe that that is one of the most valuable features of a popular agricultural education. It has not succeeded as well as I could

EXTRACTS FROM CORRESPONDENCE OF GENTLEMEN UNABLE TO ATTEND.

"The objects of the proposed Convention are such as to command my hearty approval, and such co-operation as the facilities of my position may admit."

FRED WATTS,
Commissioner of Agriculture.

"Both the Commissioners and myself are pleased to have our names associated with your scheme for the promotion of Agricultural Education."

GEORGE BUCKLAND,
Sec'y Bureau of Agriculture and Arts, Ontario.

"I can only express my regret, and hope for better luck next time."

HUNTER NICHOLS,
Professor of Agriculture, East Tennessee University.

"Could I be with you, I would like very much to have a talk over many matters relating to Agricultural schools. I would like to hear the ideas of the various persons at work on this important problem, particularly what grade (as an educational establishment above the common or high school) the institution he is with aimed at, and also what principle of instruction is the leading one in its management. To explain my meaning: they are all called "colleges" or "universities." Both colleges and universities are, or should be, schools much above both the common school and the high school; institutions aiming at much culture, and, indeed, usually professing to have the discipline of the mind (whatever that may mean) and culture the leading objects, rather than the direct imparting of immediately useful knowledge. Now, how far is this the real aim of the various "agricultural," "technical," "scientific," and other schools springing up in all the States, mostly under the stimulus of the congressional land grant for such institutions?

"And this brings me to what I mean by the second question: what *principle of instruction* is the *leading* one in its plan. It seems to me that in many there is *no* fixed principle or definite idea as to this matter. There is a wide-spread outside demand, (a newspaper demand; or young America demand, I might say) for only knowledge that is of immediate or direct practical application. There are two distinct theories held, as unlike as day is unlike night—one, that in colleges, mental discipline and culture are the main things to be aimed at, and the acquisition of direct practical knowledge only the secondary item; the other that the acquisition of useful knowledge is of the first importance, and that mental discipline and culture are to be but secondary or incidental. Now, it seems to me that most of our Agricultural Colleges are trying to ride both horses, and are in danger of falling between. I hear a good deal of vague talk about a "healthy combination" of the two, and I am free to say that of much of the most common talk on this matter, I fail to understand its exact meaning.

"While each and every successful school must arrive at ultimate success by a process of growth, yet it seems to me that each must have a tolerably definite plan or ideal toward which it is striving, rather than a vague desire for *something* higher, but uncertain as to what that something is. It is certain that in all professional schools an important part of the instruction *must be* of technical branches, of useful knowledge, to be used directly in that profession, and presupposes the previous acquisition of not only certain rudimental branches of study, but also a certain (and usually considerable) amount of mental discipline. Now our Agricultural Colleges are, in one sense, *professional schools*, but made up of camparatively undisciplined pupils. In some cases I am tolerably well informed on, the attempted compromise is unsuccessful, whether considered in the light of an institution making cultivated scholars or making practical farmers. That the pupils are better off for attending such an institute than if they had attended none, I do not deny; but was the *system* which left them where they were left a healthy or sound one?

"No one exact type of schools can be expected to be the best for the interest of each State, but this is a matter of detail, of grade, of special studies, etc.; but there are principles of education which are as broad as humanity, tried and proven by the experience of generations, which we, in our intense desire for progress, too often wish to overthrow, or at least ignore, apparently simply because they are old.

"I will state that I believe that *Agricultural* Schools may be made successful, which will aim at high mental discipline and culture, although I do not think there is much actual and practical demand for such, yet I believe they may be made *successful*, in the truest sense of this word. And I also believe that other schools may be successful, reaching vastly larger numbers of immediate pupils, which schools may not aim at such high culture nor mental discipline, and where the imparting of useful knowledge is the leading idea in instruction—schools truly *professional*. But it seems to me that such a school should be conducted on this avowed principle, relying on its merits, without claiming for it a grade or position it does not truly hold, or pretending to do what it does not do—that is, to give a thorough education. Such a school may be not high, yet a center of great influence—greater because it honestly does what it professes. I say, after spinning out more than I intended, I would like to talk with the various presidents or managers of each schools, and see what the aims of each was, how many were trying to ride one horse, and how many two."

Yours, truly, W. H. BREWER,
Prof. of Agriculture, Sheffield Scientific School.

"Although I could not be present, I am exceedingly interested in the objects of the Convention, and trust it will be the beginning of better things than we have been obliged to be content with heretofore."

PROF. S. W. JOHNSON,
Of Sheffield Scientific School, of Yale College.

"I fully agree with you as to the importance of such a meeting, as proposed. Will gladly co-operate in any way I can."

J. B. BOWMAN,
Regent Kentucky University.

[Editorial from "New York Tribune," September 6, 1871.]

EDUCATIONAL EXPERIMENTS.

At a convention of representatives of Agricultural Colleges, held recently in Chicago, for the purpose of discussing the progress and prospects of those institutions, many facts were stated respecting their methods of conducting education, which indicate extensive innovations upon all previous systems, and may prove the forerunners of an entire change in the management of schools and colleges throughout the country. It should be observed that the agricultural colleges are not only of the branch which is designated, to distinguish it from the usual classical course, the "New Education," and which embraces sciences and modern languages; they are—especially at the West—of the most extreme portion of that division. They regard the study of the classics much as that of monastic lore and scholastic metaphysics might be regarded. In the new communities where they are situated, it is the fashion to scoff at all that is old, and the "New Education" is popular because it is new; all the methods of the old institutions are viewed with doubt and disrespect, and startling novelties are frequently substituted for them, not, it must be admitted, without success.

With many things in common, there are numerous particulars in which the "New Education" of the East differs from that of the West. In both sections of country great attention is paid by the colleges to analytical chemistry and civil engineering; but while in New England the general direction of the curriculum is chiefly toward technological studies and less toward agriculture, just the reverse is true of the Western States; yet it is obvious that there is more immediate need of the science of agriculture in cultivating the well-worn Eastern fields than in raising crops on the comparatively fresh soil of the prairies. It is noticeable that even the technological studies of the West include more of matters relating to pioneer life than those of the East; the former especially exercising the students in actual ditching and draining, and the construction of fences, farm buildings, and dwellings; the latter in the arts of the workshop rather than of the field. In general, there are many poor students who would be unable to obtain education were they not paid, at least in part, for labor; but the problem of making such labor sufficiently profitable to the colleges to keep them from running behindhand in finances, has not been solved in more than one or two instances, if at all. In the Eastern States the preparatory schools are insufficient in training pupils for the colleges, and between the State institutions and technological schools not fostered by State aid there is a direct and somewhat embarrassing competition; but in the Western States the common and high schools of the State are perfectly adequate in preparing for the universities, and in Minnesota at least, there is no rivalry whatever between private educational institutions and those of the State.

It is therefore at the West that the most remarkable results have thus far been reached. At the East it is yet believed that students' time is too much crowded for careful attention to agriculture, notwithstanding the success of the Amherst "Aggies" at the boat-race, of which the agricultural professors are very proud as the winning crew were the best scholars in their class, and were also among the hardest workers of the labor students. But at the West it is found that the students who do the most manual labor invariably accomplish the most study, and the best workmen are the best scholars. This is probably in part because the work at the West is not made compulsory, and the single exception to success with labor, in Oberlin, Ohio, may have relation to this feature. Where the students are paid extra for their labor, as in Wisconsin, a system of "docking" the pay where the work was not assiduously performed, had the effect of greatly increasing its efficiency.

But the indirect effects are as remarkable as those which lie on the surface. The students at Champaign, Illinois, "are not only not ashamed of labor," says Prof. Gregory—"they love it." They are brought by it into greater intimacy with their teachers, resulting in a better appreciation of the wants of the student, less trouble as to his discipline, extraordinary efforts on his part, and a personal improvement that is manifest in the high moral character of the graduates. All this has a correlative effect also upon the teachers, who go with the students into the field and the workshop and take hold themselves: an excellent effect, physical as well as moral. Dr. Welch of Iowa declares that it benefits him far more than the gymnasium. Prof. Miles of Michigan tells of the delight which he and his boys experienced on completing a school building, every part of which was the work of their own hands. Dr. Gregory asks how could he help a joyful sympathy when his students, having constructed a 40-horse-power steam engine, asked him to sit down with his back to it and say, if he could, when it was in action and when not, its movements were so noiseless.

There are young women in large numbers in those Western colleges, and in one of them at least there is but one staircase to the building and no more division made in the domestic arrangements than in any large family. From each College that reports on this subject the testimony is that the presence of the young women has an excellent effect upon the young men, making them more mannerly, tractable, and ambitious. Dr. Welch, at whose institution in Ames, Iowa, there are fifty young women, declares that they are a most valuable adjunct in the management, with which he would not willingly dispense. Testimony is unanimous that there are fewer scandals of any sort in these colleges than in those where either sex is domiciled alone. And as to capacity for scientific learning, and also for many branches of actual work in the orchards, forests, green-houses, nurseries, and market-gardens, the young women everywhere equal and rival the young men. The *experimentum crucis* in college affairs, and one worthy of the great West, has, however, been made in Illinois and Iowa. The entire government of the College in each instance has been relegated by the Faculty to the students. The result has been that the colleges were never better governed. The students arrange for themselves a sort of semi-military organization, with a court somewhat like a court-martial, which tries offenders and pronounces the penalties for infraction of the laws of the organization. The Faculty has only to applaud the judgment thus far evinced in such trials and sentences, and the occasions for any trials at all have of late become very rare. But one fact need be added to complete the conspicuous novelty of this system of college government. The "court" in the Iowa College consists of five young men and two young women.

LAYING OF CORNER-STONE OF NEW UNIVERSITY BUILDING,

AND DEDICATION OF NEW MECHANICAL SHOPS.

At a few minutes past 3 o'clock, September 13, 1872, commenced the exercises connected with the opening of the new Drill Hall and Mechanical Shops, and the laying of the corner-stone of the new University building. The procession formed in front of the University, in the following order: First, the old students, uniformed and armed; second, the new students, about one hundred and twenty-five in number; then the faculty, the trustees, and State officers; and, finally, the citizens who had come to witness the ceremonies of the occasion.

The procession then marched to the new building, where the entire audience present cannot have fallen far short of twelve hundred. There, the Regent stated that he had just received a telegram from Governor Palmer, stating that he and his staff had been left by the cars, so that, much to his regret, it was impossible for him to be present as he had hoped.

After the University band had beautifully executed Schubert's *Parade March*, the corner stone was laid by Prof. J. B. Turner. The Rev. Mr. Frame then followed, in a short but impressive prayer; and, after a statement by the Regent of the dimensions of the new building, the procession reformed and marched to the new Mechanical Shops, the band playing *Hail Columbia*.

At the hall the Regent stated that we were then standing in what was probably the first building of its kind in America, a building dedicated to the mechanic arts, which are to do so much to develop the resources of the country, and to military science, which shall defend the product of those arts if need be. After detailing the intended uses of the different portions of the Mechanical Building, details with which our readers are already familiar, the doctor stated that the building would not only be completed, but entirely furnished with machinery, etc., at a cost not exceeding the appropriation for the building alone. This success, he said, was due to the faithfulness of the trutees, of the architect, and of the contractor, Mr. Gehlman, who, though he had taken the contract for several hundred dollars less than any one else thought the building could be erected for, was still doing more than his contract bound him to—putting in better material, in some instances, than he had agreed to. After these deserved encomiums, the Regent introduced Prof. J. B. Turner, by saying that he needed no introduction, since "his name, if not so long as the State, is as broad as the Continent."

After explaining that, owing to the detention of Governor Palmer, he had been unexpectedly called upon to deliver the leading address, Prof. J. B. Turner, of Jacksonville, spoke as follows:

ADDRESS OF PROF. J. B. TURNER.

Fellow-Citizens:

It gives me joy to meet you on this interesting occasion. For more than twenty years a little band of brothers, in this State, labored as well and as faithfully as we could for the promotion of Industrial education, in this great Republic of ours. In this labor, no one of my comrades ever received one cent of public funds in payment for either time or expenses. We sought and accepted no offices or perquisites whatever, in connection with the enterprise; and not one single man, of that original band of brothers, holds any such relation to-day, or ever has held it, or to my knowledge ever sought to hold it. If, then, our hands are not clean, let those whose hands are clean, wash us, and make us clean.

At one time, as you all know, the whole enterprise seemed to us to stumble and fall: to come to nought so far as our day and generation were concerned. I say it so seemed to us; and however mistaken, we were honest in our view. Under the same conditions, we should still think the expenditure of funds here an entire waste to the State, which we could not approve. That was a sad and a dark day to us—to me one of the saddest and darkest days of my life. But we all decided not to attack the Institution: to let it live amid its new surroundings if it could, even though we had no faith that it could. Then came the criticisms of its friends, who were supposed to know of its surroundings, deepening both our gloom and our despair, and intensifying all our natural prepossessions, prejudices and fears. We shut our mouths, bit our lips, and bitterly hoped for some better resurrection of our idolized principles, after we were in our graves.

But all this is now changed; and it is not only our duty but our great joy to change to meet the new conditions; doubly so when we reflect that the present board of trust and of instruction were, in no sense, responsible for any of those untoward conditions. For the first time I came to this University last winter to see for myself. I did not find any one of the Professors and Teachers either omniscient or omnipotent; nor yet angels walking the earth with sublime grandeur, with wings at their shoulders, all plumed and ready for the skies. From the newspaper accounts I had previously read of them, I hardly expected this. But I found or at least I fancied that I found) good, honest-hearted, intelligent men, prosecuting a great, arduous, and difficult public work—new in its ends and aims, and untried in its modes and methods—with a patience, a zeal, and a self-devotion worthy of their great cause; and when I have said that, I have said enough in praise of any set of mortal men that ever lived. I found, also, a corps of most courteous and well-behaved pupils, well worthy of their teachers. They frankly told me (what it is easy to see in any similar Institution under the sun) that they had made mistakes, and were striving to correct them; and expected to make more and correct them, too. What more or better did any man expect, who knew anything about the newness, the difficulties, and the natural and artificial obstacles of the great enterprise in which they are engaged. It will probably take a thousand years for a single one of these great free States to learn to endow and manage these Industrial Universities, in the best possible manner. But what of that? Shall we never attempt to learn the greatest of all possible arts, the preparing of our American youth for a true American life, because our art is difficult and our lesson a long one? I shall soon die; you will soon die; we shall all soon die; but these Institutions will live—live still to learn their art and their duty, and to bless their race, long after the oaks have grown and fallen again, and rotted over our graves. Here, then, is my tripple joy. I come here again to-day to cast off and abjure all my former prejudices and prepossessions—if prejudices and prepossessions they were—and to bury them beneath the corner stone of this new and beautiful edifice, now rising to our view. What greater joy can any man have than when he finds things better even than he had dared to hope? Such, in kind, is the joy of the angels when it becomes "meet that they should make merry and be glad, for this their brother was dead and is alive again—was lost and is found;" in this case, a resurrection a half century sooner than I, for one, dared to hope for it, only a few short years ago. Why, then, should I not this day rejoice?

This Institution will still need, in the future as in the past, a magnanimous patience within, and a magnanimous forbearance from without its walls; our little and censorious criticisms can neither destroy nor aid it. Thank God, it has already, even though beyond our former hope, become two big for any such result.

It must now live! It ought to live! and it will live! The fly that can annoy the elephant cannot devour him, even though he may continue to keep him in an unseemly wagging of his tail. Do the best it can, this Institution will not and cannot do all we desire, for at least a round hundred years to come; though it may, and it can, and it will, do a good work to-day, and to-morrow, and forever.

Some lament because that only a small per cent. of the youth educated in our Agricultural Colleges remain, in after life, in industrial pursuits; and therefore deem these institutions a failure. Now, several, if not most of our older colleges were founded for the special and avowed purpose of training up the youth for the ministry of the Gospel. And yet it is doubtful whether five per cent. of their graduates ever in fact enter the ministry at all; and do we hear their trustees and guardians and patrons talk of abandoning these colleges because such is the result? Not at all: they have better sense than all that. They well know that after a young man has been educated by their methods, he will and must, to a greater or less extent, imbibe their spirit, become possessed of their animus, and tend to diffuse it over the whole surface of human society, in whatever profession he may be engaged. "Verily the children of this world are in their generation wiser than the children of light." If then these sons of our farmers and our friends are educated in our Industrial institutions—which are in no sense conventional, partisan or sectarian, but in all their methods, ends and aims, truly, grandly and broadly industrial, natural, scientific and American, and therefore christian—I care not into what particular professions they may choose to go in after life! This is a free country, and they have a right to go where they please: but wherever they may go, or in whatever they may engage, they must and they will carry the broad, scientific, catholic, American and truly christian spirit of their *Alma Mater* along with them, instead of the narrow and scholastic spirit of caste and sect. We may trust them as our men, true sons of the Republic, and true sons of God, whatever profession they may elect, wherever they may rest, or wherever they may roam, the whole world around.

I know there are good and true men in our State and in all the States, who still differ from you and from me, in their views of American education. Some, and quite a large class, think that the State, as such, should confine its whole effort to perfecting the common schools, and leave the higher form of knowledge to take care of itself. But no State ever did, or ever will, keep up a full and vigorous supply of either knowledge or goods, at retail, which did not a the same time take care that its great wholesale supplies should be ever open and near at hand. The whole thing is absurd. Others say that political States cannot successfully endow and manage our higher universities; and that, too, in spite of the fact that no institution, worthy of the name of an university, was ever founded or endowed without State aid and patronage, on the face of the earth, or probably ever will be. It would be quite as becoming for a great State like Illinois to run abroad for all her goods and merchandise, as to do it for all her higher forms of knowledge; and what it is clearly impossible that individuals should do, in this regard, it is wise and proper that the State should do.

It is said that there is also in our State still a small class of seven-by-nine politicians, who occasionally sneer at the great cause of industrial education, and begrudge it the crumbs it gathers. Let them sneer. To all such in this State, and in all our States, I have but one answer to give in behalf of the farmers and working men of the Republic. We intend to keep on asking for endowments for each and all of these institutions throughout the land, until we have made each one of them, in some good degree, in all needful buildings, apparatus, perquisites and endowments, what they ought to be; and when they shed the full radiance of their united glory and light over every state and every hamlet on this continent, from sea to sea, we intend to point to them and say to these carpers, "these are all our stealings from the treasuries of the Republic. We obtained every dollar of them by the honest vote of a proud, a patriotic, and a grateful people; and now, where are yours? Can you, dare you show them to us?" And whenever their dishonest stealings—which they cannot and dare not show—do not in fact amount to ten times as much as our honest ones, which we can show with great pleasure and pride, we intend to suspend all further applications, and give them a chance to get even with us again.

The mass of our people pay the taxes and fight the battles of the country, and whichever party is in power, they do none of the stealing out of the public treasury, and I, for one, am tired of the groaning and whining of the few who do it all, whenever these masses ask for a few dollars out of the general or the State treasury, for some great agricultural or industrial interest of their own. I have no doubt that the majority of our people and our legislators, who are not thieves, will continue to give us all we may need in this regard, and that in despite of all these croakers, these institutions will at last achieve a great and glorious success. Let, then, these beautiful walls rise, as the monument of our past endeavor and the memorial of our plighted faith, if not *where* we preferred, still to become *what* we preferred; if not as our feeble forecast prescribed, still in that better way which He who alone can truly forecaste and overrule all events, may prescribe and elect. Let them rise till the myriads who dwell upon these rich plains shall throng around to uphold, to endow, and to bless them, till their rising light shall shine far abroad over this great green sea of prairie lands, with its woodland isles and dales, to gladden every household, to bless every farm, and to enlighten and exalt every soul: till ministering angels shall come to greet and to bless their inmates with every morning sun, and bid them rest and sleep in peace with every evening shade.

The band then played Prof. Oolberg's "Industrial University March," and then the audience listened to the

ADDRESS OF HON. N. BATEMAN, LL.D.

On the 11th day of March, 1868, just three and a half years ago, the Illinois Industrial University was formally inaugurated, with appropriate ceremonies. In the presence of a large concourse of citizens, gathered from every part of the State, words of gratitude and of hope were spoken—glad songs were sung—and the benedictions of Almighty God were solemnly invoked upon this new child of humanity and of civilization, as, in weakness, yet in faith, it stepped into line, and entered upon its work.

It was my privilege to participate in the services of that great day—to sketch the history of that long series of efforts which had culminated in the great act of Congress of July 2, 1862, and in the acts of our General Assembly of January, February and March, 1867, locating and organizing this University—to indicate the principles upon which it was proposed to conduct the Institution—to point out the elements wherein it was to be and to remain radically separate and distinct from all other existing State Institutions, and to invite to it the support and confidence of the public.

Three years and a-half have come and gone—years of arduous toil, of struggle and trial and peril, of the most painful vicissitudes of hope and fear—and to-day we meet again. And for what do we meet? To acknowledge the failure of another experiment in behalf of the higher education of the industrial classes? To mourn over abandoned plans and perished hopes? To put the Illinois Industrial University into bankruptcy, inventory and sell its assets, and dissolve forever this grand partnership of labor and learning?

Nay, verily, but to lay the corner-stone of a new University building, the best adapted and planned edifice of its class on the continent, with class-room accommodations for over one thousand students; and to celebrate the opening of a new Mechanic and Military Hall, of corresponding proportions. These are the objects for which we meet—these the auspices under which we assemble to-day.

I am not unacquainted with the history and progress of all the Agricultural Colleges established on the foundation of the public lands granted by the act of Congress of July 2, 1862, and I affirm that no other has accomplished so much within the same period from the opening of its doors for the admission of students, as has ours. And if reference be had to the number and nature and continuance of the obstacles and difficulties encountered, the progress of this Institution is altogether remarkable.

In a little more than three years of actual working time, order has been evoked from confusion; the departments have been defined and organized; the landed estates have been pushed rapidly towards a symmetrical development; the old building has been made to seem even more unsightly by contrast with the orderly beauty of the grounds in which it now stands; specimens of philosophical and other apparatus of finished workmanship and improved construction have attested the efficiency of the mechanical department; series of experiments of great practical value to farmers, horticulturists and stock-raisers, have been inaugurated; attention has been widely drawn to the courses of public lectures on practical subjects, given at the University, and elsewhere under its auspices; the libraries have been enriched by rare works, carefully selected by the Regent and Faculty, from the treasures of both Europe and America; the department of chemistry already challenges the attention of recognized masters in that most splendid of the natural sciences; similar institutions in Europe have been visited and studied, and such improved methods and principles as were found to be applicable here, have been introduced to enrich and perfect our own system; the number of students has more than quadrupled. while the average attainments of applicants has advanced in nearly an equal ratio, thus supplying better material for the forces of the University to work upon; the atmosphere of the Institution is wholesome and bracing, producing an earnest and manly average tone of student life; through all the departments and classes of the University the freshest and most inspiring breezes come from the fields and meadows, from the facts and objects of the outer world, and not from books, and the *trend* of the Institution is already very powerful in the direction of those pursuits and ends for which it was established; and, finally, the current of public sentiment now sets, strong and steady, *towards* the University, and the people of the State, through their representatives, have recently put the seal of their approbation and confidence upon it, by appropriating the funds wherewith these structures are now rising to completion.

Are not these hopeful results to be achieved in forty-two months? and do they not prophesy a great future? Who that stood with us in March, 1868, dared even to hope for what is reality to-day?

And now the inquiry arises, what has brought about these results, this refluent wave of public sentiment, these converging and centripetal forces, these auspicious events and well founded anticipations of greater things in the near future?

Not to under-estimate other contributing factors, I believe that prominence is due the following:

1. To the sound and well considered principles promulgated by the trustees in their first published circular. Truly comprehending and firmly grasping the outlines of the problem set before them, they boldly declared at the very outset, what they believed to be the true character of the Institution which they were to found, and the essential conditions of success. They uplifted a banner that was *fit* to be borne at the head of the columns of modern civilization. Rejecting the wood, hay and stubble of those who would build for to-day, they chose granite and iron, gold and precious stones, for their temple of ages. Denying the imputation that farmers and artizans needed *less* culture than others, they proclaimed the truth that no other classes needed more careful training, and that only by learning equally varied and profound, would it be possible for the industrial classes to break down the barriers in their way, and protect themselves against the formidable aristocracy that was growing up under the name of the professional classes.

The scheme which they presented did not escape criticism. To some it was a stumbling block, to others foolishness. Though drawn up with the laws of Congress and of Illinois open before them, and with fidelity to their spirit and intent, a lower and narrower interpretation was tenaciously urged, and the weapons of irony and ridicule were mingled with the graver imputation of a perversion of the funds from their legitimate purpose. But the trustees, with patient endurance, steadfastly looking into the future, stood quietly yet firmly by their convictions, and in accordance therewith the University, in due time, was launched.

The good effects of the high ground thus assumed at the outset have been incalculable. It led to an earnest and widely extended discussion of the whole question of higher education, of State and national Universities, and especially of the problem of how to marshal the forces of science and culture in the interest and to the support of the children of toil. The press teemed with arguments and theories, with essays and strictures, on one side or the other, while editorial lightnings flashed and thunders rolled continually. By all this the *people* were mightily stirred, instructed and *educated*. It is safe to say that the liberal views on which the University was founded, have three friends and supporters to-day, where they had one, when the controversy began. The fact that the Regent is at this moment at his wit's end to provide room for the students already here and known to be coming, is proof on this point. By uplifting this worthy standard, we have all the time had something worth contending for, while upon the lower plane proposed by some, success would have itself been a defeat.

2. But a true philosophy of education, broad and comprehensive plans, have in themselves no self-acting, self-developing power. Be these never so wise and good, success must still depend in a large measure upon the fidelity and capacity of the agents to whom the execution is intrusted. I am here as the blind eulogist of none, but a sense of what is justly due to good and faithful servants, will not allow me to withhold an expression of the belief I entertain, that to the Regent and Faculty is also due much of the success and prestige achieved.

Had the first Regent and Professors of the University been men of less breadth and discernment; less honest and catholic in their views; less ready and willing to seize and utilize every legitimate element of success, every sound principle, whether old or new—had they been less conscientious and devoted, as well as capable and scholarly, and less patient and prudent withal, we might not have been summoned hither to-day on this glad errand; these nascent walls might not have been grandly rising about us.

Few appreciate the environment of difficulties attending the opening of a great institution of learning, even under the most favorable circumstances—the unlooked-for emergencies and perplexities, the adjustment and arrangements and re-arrangements, till all is made to run smoothly, each force acting without noise or friction, each body moving in its own appropriate orbit. But how formidably and painfully enhanced are the embarrassments when the enterprise itself is largely experimental, with no beaten paths to follow, no sure lights to guide—the past almost a blank, the future little better than darkness.

Not only was this the problem with which our Regent and his associates had to grapple, but there were other and special elements of difficulty. A then recent contest for the location of the University had left the usual harvest of irritations and alienations; the friends of industrial education were not a unit in support of the Institution, nor even in their views of the general principles and policy in accordance with which it should be organized and conducted. Amid the clashing of opinions and theories, the public mind became for a time bewildered and confused, and many students delayed entering the Institution till it should clearly appear what the excitement signified or portended, and what the end thereof might be. Added to all this, the buildings were unsuitable and insufficient, the appliances of instruction were meagre in the extreme, the number of teachers inadequate, and the available funds wholly unequal to the necessities of the case.

Into the midst of this unpromising conflict, environed by this tangled web of difficulties, these strong, brave men entered, doing the best they could, pressing steadily on, each bearing a double burden of labor and responsibility, patient, uncomplaining, hopeful; waiting till the morning should break, and relief and recognition come. They have, indeed, settled convictions as to the fundamental truths of education and educational philosophy, but they were wedded to no pet theories in collateral matters, and committed to no stereotyped methods and measures of reaching the desired end. Ever seeking light, and willing to walk therein when found, they have not disappointed the confidence reposed in them. While resisting every attempt to overthrow the broad foundations on which they believed that the temple must be reared, if at all, they have ever been ready to modify the details of the superstructure in accordance with the unfoldings of events and the teachings of experience.

3. But the most potential cause of the triumphant success of the Illinois Industrial University, and of the noble future which we are to-day permitted to believe lies before it, is without doubt the fact, becoming daily more apparent, that its work is in harmony with and demanded by the *pressing needs of the living present;* that it is moving in the line of the ocean-currents of modern thought—in the direction of the paramount interests and necessities of humanity.

But for this, in vain would be the excellence of its curriculum, the learning and heroism of its Regent and Faculty, the magnificence of its buildings and the abundance of its resources. The cry of the disappointed and tired world is: "Give us the true bread and water of life—we are starving upon husks and fleshless bones. If there is balm in the Gilead of science, bring it down to us, for we are sick unto death. If there is blessing and power in philosophy and learning, dispense them to the toiling millions. We would not know less of the world to come, but more of these visible heavens and this solid earth."

In response to this long and bitter cry of the ages, we have at last a *new departure* in education. Its impressive motto is: "The invisible things of God from the creation of the world are clearly seen, being understood by the *things that are made.*"

The movement is from the few toward the many—through the abstract to the concrete—from books to nature—from sect and caste and party, to humanity. Welcoming *all* knowledge, the whole unbroken circle of the sciences, and joyfully recognizing the right of every man to devote himself to any chosen study and to any pursuit in life—making war upon no existing institutions and courses of study—its special province is to *utilize* education in the interest of productive industry, to *deploy* the shining battalions of science out upon the open plains of life, and bring them to the support of the ubiquitous and gigantic activities of the age.

Bowing to the truth that by the sweat of his face shall man eat bread, it seeks to lessen the sweat and increase the quantity of bread. It sees the great bulk of mankind engaged in tilling the soil, and wearily fighting the myriad foes to which every plant and cereal and esculent is exposed, and seeks to help them in the unequal encounter. To that man, vainly endeavoring to raise wheat in a soil destitute of the essential elements demanded by that grain, it whispers a word of counsel—he changes the crop, or supplies the needed ingredients, and success is the result. It sees the scanty results of husbandry everywhere, compared with the possibilities of the soil, and invites desponding farmers to the cheering revelations of vegetable physiology.

It looks out upon this marvelous land of ours, so full of exhaustless treasures, above and beneath the surface—upon the infinite variety and magnificence of its natural scenery—its lakes and rivers, its Niagaras and Yo Semites, its ocean-girdled shores, its stupendous mountain ranges, its boundless capacities for manufactures, and for domestic and foreign commerce—upon its amazing national and corporate enterprises, its screaming locomotives, pushing north, south, east and west, like the beast of apocalyptic vision, while tunnels open and bridges rise to receive them as they thunder along. It beholds the rising towns and cities, the tidal waves of emigration setting towards the occidental ocean, while State is added to State, and territory after territory is organized out of the imperial domains of the far West, affording illimitable opportunities and boundless fields for the display of enterprise, with swift and sure rewards for the energetic and industrious.

It contemplates one form of government, so wise and free, with every avenue of preferment open to honorable competition—no fetters on limb or conscience, on press or tongue—no tyranny of priest or king, of oligarchy or caste. And our people, keen, shrewd, alert—full of the spirit of enterprise, adventure, enthusiasm and dash ; the most aggressive and self-reliant on earth. And marking all these things it asks, what should be the education of such a people, in such an age and country ? Was ever a people so environed by such tremendous incentives to a brave and heroic manhood ? Its high challenge is: Go into these battle-fields; cut and hew and delve; dig down these mountains, fill up these valleys, bridge these rivers, push on the highways of commerce; lay the iron rails, stretch the telegraphic wire, down with the forests, up with the homestead, on with the stalwart hosts of industry; let the anvils ring, the forges blaze, the shuttles fly, the spindles hum; speed the plow, the loom, the ship and the buzzing wheels; explore the mine, bring up the shining ores, stuff the black diamonds into the red hot throats of furnaces, and let the molten iron and steel pour forth; peer into the mysteries of soils, of animal and vegetable life and growth, bend upon them the apocalyptic light of the solar ray, clap on them the vise and thumb-screw of chemical analysis, and wrench and torture their secrets from them ; and you, ye Titans who wield and whirl the mechanical forces, marshal the omnipotence of your dynamics and statics to relieve the strained and aching sinews of man, to reduplicate his power, add to his comfort and ennoble his life; ye landscape gardeners, and rural engineers, subsidize the hillsides and slopes, the wild rocks and glens, the majestic forests and tangled thickets; fling over them all the spell of your enchantments, and make them minister to beauty and adornment. With trees and shrubs in clumps and groups, at artistic points, with clambering vine and rose-clad trellis—with the cheap and simple magic of light and shade, foreground and perspective, *beautify* the homes of the toiling poor, for it is the will of God that *earth*, as well as heaven, shall be filled with brightness and glory.

These are the trumpet voices that seem to ring out from these rising walls and foundation stones, sounding upwards to God and grandly echoing onwards into the stillness and silence of the waiting future. This is the *new departure* in education—not differing so much from the old in essence and purpose, because these are generically and immutably the same, but calling upon the children of men to give a *new direction*, *new uses*, to their powers when trained and polished by culture—uplifting the gorgeous banner of Nature, written all over with symbols of matchless wisdom, and flashing with the ineffable glory of God, and seeking to attract to it and to gather about it the devotion and love and joyful service of those whom philosophy and learning have made keen-sighted strong. It declares that in the problems of husbandry and mechanics; of mining, engineering and architecture; of animal and vegetable physiology and hybridization, and a thousand others arising out of the practice of the industrial arts, there is scope for the loftiest powers and the profoundest learning, while their pursuit opens up the fountains of intense, ever-varying and perennial enjoyment.

It is because I believe that this building which we to-day inaugurate, and that statelier one whose corner-stone we have now laid, and the University to which they both belong, are all linked with the future well-being and glory of Illinois, and with these brighter hopes for the on-coming ages of culture and of humanity, that I have left my work and come hither to-day. God grant that the dawn of a long career of great usefulness and prosperity; of liberal provision and fostering care; of public respect, confidence and affection, which to-day seems breaking along the horizon of this Institution, may shine on, brighter and brighter, until the perfect day.

Prayer was then offered by the Rev. Mr. Riley.

Upon the platform were the Hons. Messrs. Miller, Williams, Sheldon, Langley, Wright, Flagg, Griggs, Cunningham, Dunlap, and perhaps others; also, members of the Board of Supervisors of the county. Several of these were called upon for speeches, and made short but appropriate remarks, all of them indorsing fully the course pursued by the University, and promising it their heartiest support.

Mr. Bailey, of the Board of Supervisors, being called upon as a representative of the people of Champaign county, expressed himself, and the people in general, as well satisfied that the University had been a benefit to them in the past, and would be still more in the future.

Music by the band followed, and the audience adjourned, to meet next year, Providence permitting, to dedicate the main building.

And now a few

CLOSING WORDS.

Germs are prophecies. The germ of the acorn is a prophecy of the wide-spreading oak. The past is the germ of the future. The histories of the coming centuries will be but an outgrowth of the events of the present, as the history of the present is but an outgrowth of that of the past.

Seeds grow, produce and die, and by culture their fruits are improved, new species are created and take the place of the old. New prophecies are written in the hidden recesses of the seed. There the eye of the skilled botanist may detect them, but the multitude see them not, read them not; *they* must wait until the germ has become a plant, perhaps until it has produced its first fruits, until the prophecy has become history.

In the history of education it is evident that the education of the present is but an outgrowth of that of the past; but cultured by experience, the old education has "sported," as horticulturists say, and a new seedling produced. The men of experience and thought, the skillful botanists in educational matters, read long ago in this plant of *industrial education* the prophecy of its future. Would-be sages said it was but a seed of the old plant, and that hence it would produce the same fruit as the plant from which it sprung. Prophets of evil foretold its speedy withering, and did all in their power to prove their prognostications true. But those to whom the seed had been entrusted, dug broad and deep the ground which was to receive it, and the germ, in spite of adverse storms, has grown and prospered. Its first fruits have been produced, and the vote of the Illinois Legislature last winter, granting such magnificent appropriations to the Industrial University, was the verdict of impartial judgment pronouncing them good.

But the fruit of a plant is also its seed; if the present is the accomplishment of the past, it is also the prophecy of the future.

If now we look upon the present of the University as we should, as a germ, a prophecy of its future and of the future of the education which it represents, their common strength and grandeur in years yet to come may better be imagined than described.

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